PR
5261
.3
1879
O.M.N.

This book was given to the
ST. OLAF COLLEGE LIBRARY
By
Olaf Morgan Norlie

EH

9839

OLAF MORGAN NORLIE

From K. O. Eittreim

From O. M. Norlie

THE LAWS OF FESOLE.

A Familiar Treatise

ON THE ELEMENTARY PRINCIPLES AND PRACTICE OF

DRAWING AND PAINTING.

AS DETERMINED BY THE TUSCAN MASTERS.

ARRANGED FOR THE USE OF SCHOOLS.

BY

JOHN RUSKIN, LL.D.,

HONORARY STUDENT OF CHRIST CHURCH, AND SLADE PROFESSOR OF FINE ARTS.

VOLUME I.

NEW YORK:
JOHN WILEY & SONS,
15 ASTOR PLACE.

1879.

ST. OLAF COLLEGE LIBRARY
NORTHFIELD, MINNESOTA

PR5261
.L3
1879
OMN

THE S. W. GREEN
TYPE-SETTING MACHINES,
16 and 18 Jacob Street,
NEW YORK.

CONTENTS OF VOL. I.

PAGE

PREFACE, ... v

CHAPTER I.

ALL GREAT ART IS PRAISE, ... 1

CHAPTER II.

THE THREE DIVISIONS OF THE ART OF PAINTING, 7

CHAPTER III.

FIRST EXERCISE IN RIGHT LINES : THE QUARTERING OF ST. GEORGE'S SHIELD, ... 17

CHAPTER IV.

FIRST EXERCISE IN CURVES : THE CIRCLE, . . 25

CHAPTER V.

OF ELEMENTARY FORM, ... 38

11718

CHAPTER VI.

PAGE

OF ELEMENTARY ORGANIC STRUCTURE, . . . 52

CHAPTER VII.

OF THE TWELVE ZODIACAL COLOURS, . . . 74

CHAPTER VIII.

OF THE RELATION OF COLOUR TO OUTLINE, . . 93

CHAPTER IX.

OF MAP DRAWING, ... 112

CHAPTER X.

OF LIGHT AND SHADE, ... 140

PREFACE.

The publication of this book has been delayed by what seemed to me vexatious accident, or (on my own part) unaccountable slowness in work: but the delay thus enforced has enabled me to bring the whole into a form which I do not think there will be any reason afterwards to modify in any important particular, containing a system of instruction in art generally applicable in the education of gentlemen; and securely elementary in that of professional artists. It has been made as simple as I can in expression, and is specially addressed, in the main teaching of it, to young people (extending the range of that term to include students in our universities); and it will be so addressed to them, that if they have not the advantage of being near a master, they may teach themselves, by careful reading, what is essential to their progress. But I have added always to such initial principles, those which it is desirable to state for the guidance of advanced scholars, or the explanation of the practice of exemplary masters.

The exercises given in this book, when their series is

completed, will form a code of practice which may advisably be rendered imperative on the youth of both sexes who show disposition for drawing. In general, youths and girls who do not wish to draw should not be compelled to draw; but when natural disposition exists, strong enough to render wholesome discipline endurable with patience, every well-trained youth and girl ought to be taught the elements of drawing, as of music, early, and accurately.

To teach them inaccurately is indeed, strictly speaking, not to teach them at all; or worse than that, to prevent the possibility of their ever being taught. The ordinary methods of water-color sketching, chalk drawing, and the like, now so widely taught by second-rate masters, simply prevent the pupil from ever understanding the qualities of great art, through the whole of his after-life.

It will be found also that the system of practice here proposed differs in many points, and in some is directly adverse, to that which has been for some years instituted in our public schools of art. It might be supposed that this contrariety was capricious or presumptuous, unless I gave my reasons for it, by specifying the errors of the existing popular system.

The first error in that system is the forbidding accuracy of measurement, and enforcing the practice of guessing at the size of objects. Now it is indeed often well to outline at first by the eye, and afterwards to correct the drawing by measurement; but under the present method, the student

finishes his inaccurate drawing to the end, and his mind is thus, during the whole progress of his work, accustomed to falseness in every contour. Such a practice is not to be characterized as merely harmful, – it is ruinous. No student who has sustained the injury of being thus accustomed to false contours, can ever recover precision of sight. Nor is this all: he cannot so much as attain to the first conditions of art judgment. For a fine work of art differs from a vulgar one by subtleties of line which the most perfect measurement is not, alone, delicate enough to detect; but to which precision of attempted measurement directs the attention; while the security of boundaries, within which maximum error *must* be restrained, enables the hand gradually to approach the perfectness which instruments cannot. Gradually, the mind then becomes conscious of the beauty which, even after this honest effort, remains inimitable; and the faculty of discrimination increases alike through failure and success. But when the true contours are voluntarily and habitually departed from, the essential qualities of every beautiful form are necessarily lost, and the student remains forever unaware of their existence.

The second error in the existing system is the enforcement of the execution of finished drawings in light and shade, before the student has acquired delicacy of sight enough to observe their gradations. It requires the most careful and patient teaching to develop this faculty; and it can only be developed at all by *rapid* and *various*

practice from natural objects, during which the attention of the student must be directed only to the facts of the shadows themselves, and not at all arrested on methods of producing them. He may even be allowed to produce them as he likes, or as he can; the thing required of him being only that the shade be of the right darkness, of the right shape, and in the right relation to other shades round it; and not at all that it shall be prettily cross-hatched, or deceptively transparent. But at present, the only virtues required in shadow are that it shall be pretty in texture and picturesquely effective; and it is not thought of the smallest consequence that it should be in the right place, or of the right depth. And the consequence is that the student remains, when he becomes a painter, a mere manufacturer of conventional shadows of agreeable texture, and to the end of his life incapable of perceiving the conditions of the simplest natural passage of chiaroscuro.

The third error in the existing code, and in ultimately destructive power, the worst, is the construction of entirely symmetrical or balanced forms for exercises in ornamental design; whereas every beautiful form in this world, is varied in the minutiæ of the balanced sides. Place the most beautiful of human forms in exact symmetry of position, and curl the hair into equal curls on both sides, and it will become ridiculous, or monstrous. Nor can any law of beauty be nobly observed without occasional wilfulness of violation.

The moral effect of these monstrous conditions of ornament on the mind of the modern designer is very singular. I have found, in past experience in the Working Men's College, and recently at Oxford, that the English student must at present of necessity be inclined to one of two opposite errors, equally fatal. Either he will draw things mechanically and symmetrically altogether, and represent the two sides of a leaf, or of a plant, as if he had cut them in one profile out of a doubled piece of paper; or he will dash and scrabble for effect, without obedience to law of any kind: and I find the greatest difficulty, on the one hand, in making ornamental draughtsmen draw a leaf of any shape which it could possibly have lived in; and, on the other, in making landscape draughtsmen draw a leaf of any shape at all. So that the process by which great work is achieved, and by which only it can be achieved, is in both directions antagonistic to the present English mind. Real artists are absolutely submissive to law, and absolutely at ease in fancy; while we are at once wilful and dull; resolved to have our own way, but when we have got it, we cannot walk two yards without holding by a railing.

The tap-root of all this mischief is in the endeavor to produce some ability in the student to make money by designing for manufacture. No student who makes this his primary object will ever be able to design at all: and the very words "School of Design" involve the profoundest of Art fallacies. Drawing may be taught by tutors:

but Design only by Heaven; and to every scholar who thinks to sell his inspiration, Heaven refuses its help.

To what kind of scholar, and on what conditions, that help has been given hitherto, and may yet be hoped for, is written with unevadable clearness in the history of the Arts of the Past. And this book is called "The Laws of Fésole" because the entire system of possible Christian Art is founded on the principles established by Giotto in Florence, he receiving them from the Attic Greeks through Cimabue, the last of their disciples, and engrafting them on the existing art of the Etruscans, the race from which both his master and he were descended.

In the centre of Florence, the last great work of native Etruscan architecture, her Baptistery, and the most perfect work of Christian architecture, her Campanile, stand within a hundred paces of each other: and from the foot of that Campanile, the last conditions of design which preceded the close of Christian art are seen in the dome of Brunelleschi. Under the term "laws of Fésole," therefore, may be most strictly and accurately arranged every principle of art, practised at its purest source, from the twelfth to the fifteenth century inclusive. And the purpose of this book is to teach our English students of art the elements of these Christian laws, as distinguished from the Infidel laws of the spuriously classic school, under which, of late, our students have been exclusively trained.

Nevertheless, in this book the art of Giotto and An-

gelico is not taught because it is Christian, but because it is absolutely true and good: neither is the Infidel art of Palladio and Giulio Romano forbidden because it is Pagan; but because it is false and bad; and has entirely destroyed not only our English schools of art, but all others in which it has ever been taught, or trusted in.

Whereas the methods of draughtsmanship established by the Florentines, in true fulfilment of Etruscan and Greek tradition, are insuperable in execution, and eternal in principle; and all that I shall have occasion here to add to them will be only such methods of their application to landscape as were not needed in the day of their first invention; and such explanation of their elementary practice as, in old time, was given orally by the master.

It will not be possible to give a sufficient number of examples for advanced students (or on the scale necessary for some purposes) within the compass of this hand-book; and I shall publish therefore together with it, as I can prepare them, engravings or lithographs of the examples in my Oxford schools, on folio sheets, sold separately. But this hand-book will contain all that was permanently valuable in my former Elements of Drawing, together with such further guidance as my observance of the result of those lessons has shown me to be necessary. The work will be completed in twelve numbers, each containing at least two engravings, the whole forming, when completed, two volumes of the ordinary size of my published works; the first, treating mostly of drawing, for

beginners; and the second, of color, for advanced pupils. I hope also that I may prevail on the author of the excellent little treatise on Mathematical Instruments (Weale's Rudimentary Series, No. 82), to publish a lesson-book with about one-fourth of the contents of that formidably comprehensive volume, and in larger print, for the use of students of art; omitting therefrom the descriptions of instruments useful only to engineers, and without forty-eight pages of advertisements at the end of it. Which, if I succeed in persuading him to do, I shall be able to make permanent reference to his pages for elementary lessons on construction.

Many other things I meant to say, and advise, in this Preface; but find that were I to fulfil such intentions, my Preface would become a separate book, and had better therefore end itself forthwith, only desiring the reader to observe, in sum, that the degree of success, and of pleasure, which he will finally achieve, in these or any other art exercises on a sound foundation, will virtually depend on the degree in which he desires to understand the merit of others, and to make his own talents permanently useful. The folly of most amateur work is chiefly in its selfishness, and self-contemplation; it is far better not to be able to draw at all, than to waste life in the admiration of one's own littlenesses;—or, worse, to withdraw, by merely amusing dexterities, the attention of other persons from noble art. It is impossible that the performance of an amateur can ever be otherwise than

feeble in itself; and the virtue of it consists only in having enabled the student, by the effect of its production, to form true principles of judgment, and direct his limited powers to useful purposes.

BRANTWOOD, 31*st July*, 1877.

THE LAWS OF FÉSOLE.

CHAPTER I.

ALL GREAT ART IS PRAISE.

1. The art of man is the expression of his rational and disciplined delight in the forms and laws of the creation of which he forms a part.

2. In all first definitions of very great things, there must be some obscurity and want of strictness; the attempt to make them too strict will only end in wider obscurity. We may indeed express to our friend the rational and disciplined pleasure we have in a landscape, yet not be artists: but it is true, nevertheless, that all art is the skilful expression of such pleasure; not always, it may be, in a thing seen, but only in a law felt; yet still, examined accurately, always in the Creation, of which the creature forms a part; and not in itself merely. Thus a lamb at play, rejoicing in its own life only, is not an artist;—but the lamb's shepherd, carving the aiece of timber which he lays for his door-lintel into beads, is expressing, however unconsciously, his pleasure in the laws of time, measure, and order, by which the earth moves, and the sun abides in heaven.

3. So far as reason governs, or discipline restrains, the art even of animals, it becomes human, in those virtues; but never, I believe, perfectly human, because it never, so far as I have seen, expresses even an unconscious delight in divine laws. A nightingale's song is indeed exquisitely divided; but only, it seems to me, as the ripples of a stream, by a law of which the waters and the bird are alike unconscious. The bird is conscious indeed of joy and love, which the waters are not; but (thanks be to God) joy and love are not Arts; nor are they limited to Humanity. But the love-*song* becomes Art, when, by reason and discipline, the singer has become conscious of the ravishment in its divisions to the lute.

4. Farther to complete the range of our definition, it is to be remembered that we express our delight in a beautiful or lovely thing no less by lament for its loss, than gladness in its presence, much art is therefore tragic or pensive; but all true art is praise.*

5. There is no exception to this great law, for even

* As soon as the artist forgets his function of praise in that of imitation, his art is lost. His business is to give, by any means, however imperfect, the idea of a beautiful thing; not, by any means, however perfect, the realization of an ugly one. In the early and vigorous days of Art, she endeavored to praise the saints, though she made but awkward figures of them. Gradually becoming able to represent the human body with accuracy, she pleased herself greatly at first in this new power, and for about a century decorated all her buildings with human bodies in different positions. But there was nothing to be praised in persons who had no other virtue than that of possessing bodies, and no other means of expression than unexpected manners of crossing their legs. Surprises of this nature necessarily have their limits, and the Arts founded on Anatomy expired when the changes of posture were exhausted.

caricature is only artistic in conception of the beauty of which it exaggerates the absence. Caricature by persons who cannot conceive beauty, is monstrous in proportion to that dulness; and, even to the best artists, perseverance in the habit of it is fatal.

6. Fix, then, this in your mind as the guiding principle of all right practical labor, and source of all healthful life energy,—that your art is to be the praise of something that you love. It may be only the praise of a shell or a stone; it may be the praise of a hero; it may be the praise of God: your rank as a living creature is determined by the height and breadth of your love; but, be you small or great, what healthy art is possible to you must be the expression of your true delight in a real thing, better than the art. You may think, perhaps, that a bird's nest by William Hunt is better than a real bird's nest. We indeed pay a large sum for the one, and scarcely care to look for, or save, the other. But it would be better for us that all the pictures in the world perished, than that the birds should cease to build nests.

And it is precisely in its expression of this inferiority that the drawing itself becomes valuable. It is because a photograph cannot condemn itself, that it is worthless. The glory of a great picture is in its shame; and the charm of it, in speaking the pleasure of a great heart, that there is something better than picture. Also it speaks with the voices of many: the efforts of thousands dead, and their passions, are in the pictures of their children to-day. Not with the skill of an hour, nor of a life, nor of a century, but with the help of numberless souls, a beautiful thing must be done. And the obedience, and the understanding, and the pure natural passion, and the

perseverance, *in secula seculorum*, as they must be given to produce a picture, so they must be recognized, that we may perceive one.

7. This is the main lesson I have been teaching, so far as I have been able, through my whole life: Only that picture is noble, which is painted in love of the reality. It is a law which embraces the highest scope of Art; it is one also which guides in security the first steps of it. If you desire to draw, that you may represent something that you care for, you will advance swiftly and safely. If you desire to draw, that you may make a beautiful drawing, you will never make one.

8. And this simplicity of purpose is farther useful in closing all discussions of the respective grace or admirableness of method. The best painting is that which most completely represents what it undertakes to represent, as the best language is that which most clearly says what it undertakes to say.

9. Given the materials, the limits of time, and the conditions of place, there is only one proper method of painting.* And since, if painting is to be entirely good, the materials of it must be the best possible, and the conditions of time and place entirely favorable, there is only one manner of entirely good painting. The so-called 'styles' of artists are either adaptations to imperfections of material, or indications of imperfection in their own power, or the knowledge of their day. The great

* In sculpture, the materials are necessarily so varied, and the circumstances of place so complex, that it would seem like an affected stretching of principle to say there is only one proper method of sculpture: yet this is also true, and any handling of marble differing from that of Greek workmen is inferior by such difference

painters are like each other in their strength, and diverse only in weakness.

10. The last aphorism is true even with respect to the dispositions which induce the preference of particular characters in the subject. Perfect art perceives and reflects the whole of nature: imperfect art is fastidious, and impertinently prefers and rejects. The foible of Correggio is grace, and of Mantegna, precision: Veronese is narrow in his gayety, Tintoret in his gloom, and Turner in his light.

11. But, if we *know* our weakness, it becomes our strength; and the joy of every painter, by which he is made narrow, is also the gift by which he is made delightful, so long as he is modest in the thought of his distinction from others, and no less severe in the indulgence, than careful in the cultivation, of his proper instincts. Recognizing his place, as but one quaintly-veined pebble in the various pavement,—one richly-fused fragment, in the vitrail of life,—he will find, in his distinctness, his glory and his use; but destroys himself in demanding that all men should stand within his compass, or see through his color.

12. The differences in style instinctively caused by personal character are however of little practical moment, compared to those which are rationally adopted, in adaptation to circumstance.

Of these variously conventional and inferior modes of work, we will examine such as deserve note in their proper place. But we must begin by learning the manner of work which, from the elements of it to the end, is completely right, and common to all the masters of con-

summate schools. In whom these two great conditions of excellence are always discernible,—that they conceive more beautiful things than they can paint, and desire only to be praised in so far as they can represent these, for subjects of higher praising.

CHAPTER II.

THE THREE DIVISIONS OF THE ART OF PAINTING.

1. In order to produce a completely representative picture of any object on a flat surface, we must outline it, color it, and shade it. Accordingly, in order to become a complete artist, you must learn these three following modes of skill completely. First, how to outline spaces with accurate and delicate lines. Secondly, how to fill the outlined spaces with accurate, and delicately laid, color. Thirdly, how to gradate the colored spaces, so as to express, accurately and delicately, relations of light and shade.

2. By the word 'accurate' in these sentences, I mean nearly the same thing as if I had written 'true;' but yet I mean a little more than verbal truth: for in many cases, it is possible to give the strictest truth in words without any painful care; but it is not possible to be true in lines, without constant care or *accuracy*. We may say, for instance, without laborious attention, that the tower of Garisenda is a hundred and sixty feet high, and leans nine feet out of the perpendicular. But we could not draw the line representing this relation of nine feet horizontal to a hundred and sixty vertical, without extreme care.

In other cases, even by the strictest attention, it is not possible to give complete or strict truth in words. We

could not, by any number of words, describe the color of a riband so as to enable a mercer to match it without seeing it. But an 'accurate' colorist can convey the required intelligence at once, with a tint on paper. Neither would it be possible, in language, to explain the difference in gradations of shade which the eye perceives between a beautifully rounded and dimpled chin, and a more or less determinedly angular one. But on the artist's 'accuracy' in distinguishing and representing their relative depths, not in one feature only, but in the harmony of all, depend his powers of expressing the charm of beauty, or the force of character; and his means of enabling us to know Joan of Arc from Fair Rosamond.

3. Of these three tasks, outline, color, and shade, outline, in perfection, is the most difficult; but students must begin with that task, and are masters when they can see to the end of it, though they never reach it.

To color is easy if you can see color; and impossible if you cannot.*

To shade is very difficult; and the perfections of light and shadow have been rendered by few masters; but in the degree sufficient for good work, it is within the reach of every student of fair capacity who takes pains.

5. The order in which students usually learn these three processes of art is in the inverse ratio of their difficulty. They begin with outline, proceed to shade, and conclude in color. While, naturally, any clever house decorator can color, and any patient Academy pupil shade; but Raphael at his full strength is plagued with

* A great many people do not know green from red; and such kind of persons are apt to feel it their duty to write scientific treatises on color, edifying to the art-world.

his outline, and tries half a dozen backwards and forwards before he pricks his chosen one down.*

Nevertheless, both the other exercises should be practised with this of outline, from the beginning. We *must* outline the space which is to be filled with color, or explained by shade; but we cannot handle the brush too soon, nor too long continue the exercises of the lead † point. Every system is imperfect which pays more than a balanced and equitable attention to any one of the three skills, for all are necessary in equal perfection to the completeness of power. There will indeed be found great differences between the faculties of different pupils to express themselves by one or other of these methods; and the natural disposition to give character by delineation, charm by color, or force by shade, may be discreetly encouraged by the master, after moderate skill has been attained in the collateral exercises. But the first condition of steady progress for every pupil—no matter what their gifts, or genius—is that they should be taught to draw a calm and true outline, entirely decisive, and admitting no error avoidable by patience and attention.

7. We will begin therefore with the simplest conceivable practice of this skill, taking for subject the two elementary forms which the shepherd of Fésole gives us (Fig. 1), supporting the desk of the master of Geometry.

You will find the original bas-relief represented very sufficiently in the nineteenth of the series of photographs from the Tower of Giotto, and may thus for yourself ascertain the accuracy of this outline, which otherwise

* Beautiful and true shade can be produced by a machine fitted to the surface, but no machine can outline.

† See explanation of term, p. 26.

you might suppose careless, in that the suggested square is not a true one, having two acute and two obtuse angles; nor is it set upright, but with the angle on your right hand higher than the opposite one, so as partly to comply with the slope of the desk. But this is one of the first signs that the sculpture is by a master's hand. And the first thing a modern restorer would do, would be to "cor-

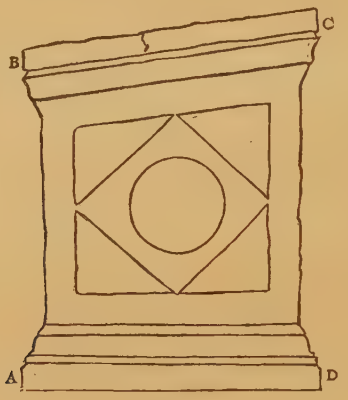

Fig. 1.

rect the mistake," and give you, instead, the, to him, more satisfactory arrangement. (Fig. 2.)

8. We must not, however, permit ourselves, in the beginning of days, to draw inaccurate squares; such liberty is only the final reward of obedience, and the generous breaking of law, only to be allowed to the loyal.

Take your compasses, therefore, and your ruler, and smooth paper over which your pen will glide unchecked. And take above all things store of patience; and then,—but for what is to be done then, the directions had best be

reserved to a fresh chapter, which, as it will begin a group of exercises of which you will not at once perceive the in-

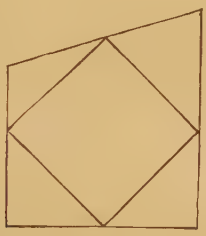

Fig. 2.

tention, had better, I think, be preceded by this following series of general aphorisms, which I wrote for a young Italian painter, as containing what was likely to be most useful to him in briefest form; and which for the same reason I here give, before entering on specific practice.

APHORISMS.

I.

The greatest art represents every thing with absolute sincerity, as far as it is able. But it chooses the best things to represent, and it places them in the best order in which they can be seen. You can only judge of what is *best*, in process of time, by the bettering of your own character. What is *true*, you can learn now, if you will.

II.

Make your studies always of the real size of things. A man is to be drawn the size of a man, and a cherry the size of a cherry.

'But I cannot draw an elephant his real size'?

There is no occasion for you to draw an elephant.

'But nobody can draw Mont Blanc his real size'?

No. Therefore nobody can draw Mont Blanc at all; but only a distant view of Mont Blanc. You may also draw a distant view of a man, and of an elephant, if you like; but you must take care that it is seen to be so, and not mistaken for a drawing of a pigmy, or a mouse, near.

'But there is a great deal of good miniature painting'?

Yes, and a great deal of fine cameo-cutting. But I am going to teach you to be a painter, not a locket-decorator, or medallist.

III.

Direct all your first efforts to acquire the power of drawing an absolutely accurate outline of any object, of its real size, as it appears at a distance of not less than twelve feet from the eye. All greatest art represents objects at not less than this distance; because you cannot see the full stature and action of a man if you go nearer him. The difference between the appearance of any thing—say a bird, fruit, or leaf—at a distance of twelve feet or more, and its appearance looked at closely, is the first difference also between Titian's painting of it, and a Dutchman's.

IV.

Do not think, by learning the nature or structure of a thing, that you can learn to draw it. Anatomy is neces-

sary in the education of surgeons; botany in that of apothecaries; and geology in that of miners. But none of the three will enable you to draw a man, a flower, or a mountain. You can learn to do that only by looking at them; not by cutting them to pieces. And don't think you can paint a peach, because you know there's a stone inside; nor a face, because you know a skull is.

V.

Next to outlining things accurately, of their true form, you must learn to color them delicately, of their true color.

VI.

If you can match a color accurately, and lay it delicately, you are a painter; as, if you can strike a note surely, and deliver it clearly, you are a singer. You may then choose what you will paint, or what you will sing.

VII.

A pea is green, a cherry red, and a blackberry black, all round.

VIII.

Every light is a shade, compared to higher lights, till you come to the sun; and every shade is a light, compared to deeper shades, till you come to the night. When, therefore, you have outlined any space, you have no reason to ask whether it is in light or shade, but only, of what color it is, and to what depth of that color.

IX.

You will be told that shadow is gray. But Correggio, when he has to shade with one color, takes red chalk.

X.

You will be told that blue is a retiring color, because distant mountains are blue. The sun setting behind them is nevertheless farther off, and you must paint it with red or yellow.

XI.

"Please paint me my white cat," said little Imelda. "Child," answered the Bolognese Professor, "in the grand school, all cats are gray."

XII.

Fine weather is pleasant; but if your picture is beautiful, people will not ask whether the sun is out or in.

XIII.

When you speak to your friend in the street, you take him into the shade. When you wish to think you can speak to him in your picture, do the same.

XIV.

Be economical in every thing, but especially in candles. When it is time to light them, go to bed. But the worst waste of them is drawing by them.

XV.

Never, if you can help it, miss seeing the sunset and the dawn. And never, if you can help it, see any thing but dreams between them.

XVI.

'A fine picture, you say?' "The finest possible; St. Jerome, and his lion, and his arm-chair. St. Jerome was painted by a saint, and the Lion by a hunter, and the chair by an upholsterer."

My compliments. It must be very fine; but I do not care to see it.

XVII.

'Three pictures, you say? and by Carpaccio!' "Yes—St. Jerome, and his lion, and his arm chair. Which will you see?" 'What does it matter? The one I can see soonest.'

XVIII.

Great painters defeat Death; the vile, adorn him, and adore.

XIX.

If the picture is beautiful, copy it as it is; if ugly, let it alone. Only Heaven, and Death, know what it *was*.

XX.

'The King has presented an Etruscan vase, the most beautiful in the world, to the Museum of Naples. What a pity I cannot draw it!'

In the meantime, the housemaid has broken a kitchen tea-cup; let me see if you can draw one of the pieces.

XXI.

When you would do your best, stop, the moment you begin to feel difficulty. Your drawing will be the best

you can do; but you will not be able to do another so good to-morrow.

XXII.

When you would do *better* than your best, put your full strength out, the moment you feel a difficulty. You will spoil your drawing to-day; but you will do better than your to-day's best, to-morrow.

XXIII.

"The enemy is too strong for me to-day," said the wise young general. "I won't fight him; but I won't lose sight of him."

XXIV.

"I can do what I like with my colors, now," said the proud young scholar. "So could I, at your age," answered the master; "but now, I can only do what other people like."

CHAPTER III.

FIRST EXERCISE IN RIGHT LINES, THE QUARTERING OF ST. GEORGE'S SHIELD.

1. TAKE your compasses,* and measuring an inch on your ivory rule, mark that dimension by the two dots at B and C (see the uppermost figure on the left in Plate 1), and with your black ruler draw a straight line between them, with a fine steel pen and common ink.† Then measure the same length, of an inch, down from B, as nearly perpendicular as you can, and mark the point A; and divide the height A B into four equal parts with the compasses, and mark them with dots, drawing every dot as a neatly circular point, clearly visible. This last finesse will be an essential part of your drawing practice; it is very irksome to draw such dots patiently, and very difficult to draw them well.

Then mark, not now by measure, but by eye, the remaining corner of the square, D, and divide the opposite side C D, by dots, opposite the others as nearly as you

* I have not been able yet to devise a quite simple and sufficient case of drawing instruments for my schools. But, at all events, the complete instrument-case must include the ivory scale, the black parallel rule, a divided quadrant (which I will give a drawing of when it is wanted), one pair of simple compasses, and one fitted with pen and pencil.

† Any dark color that will wash off their fingers may be prepared for children.

can guess. Then draw four level lines without a ruler, and without raising your pen, or stopping, slowly, from dot to dot, across the square. The four lines altogether should not take less,—but not much more,—than a quarter of a minute in the drawing, or about four seconds each. Repeat this practice now and then, at leisure minutes, until you have got an approximately well-drawn group of five lines; the point D being successfully put in accurate corner of the square. Then similarly divide the lines A D and B C, by the eye, into four parts, and complete the figure as on the right hand at the top of Plate 1, and test it by drawing diagonals across it through the corners of the squares, till you can draw it true.

2. Contenting yourself for some time with this square of sixteen quarters for *hand* practice, draw also, with extremest accuracy of measurement possible to you, and finely ruled lines such as those in the plate, the inch square, with its side sometimes divided into three parts, sometimes into five, and sometimes into six, completing the interior nine, twenty-five, and thirty-six squares with utmost precision; and do not be satisfied with these till diagonals afterwards drawn, as in the figure, pass precisely through the angles of the square.

Then, as soon as you can attain moderate precision in instrumental drawing, construct the central figure in the plate, drawing, first the square; then, the lines of the horizontal bar, from the midmost division of the side divided into five. Then draw the curves of the shield, from the uppermost corners of the cross-bar, for centres; then the vertical bar, also one-fifth of the square in breadth; lastly, find the centre of the square, and draw the enclosing circle, to test the precision of all.

More advanced pupils may draw the inner line to mark thickness of shield; and lightly tint the cross with rose-color.

In the lower part of the plate is a first study of a feather, for exercise later on; it is to be copied with a fine steel pen and common ink, having been so drawn with decisive and visible lines, to form steadiness of hand.*

3. The feather is one of the smallest from the upper edge of a hen's wing; the pattern is obscure, and not so well adapted for practice as others to be given subsequently, but I like best to begin with this, under St. George's shield; and whether you can copy it or not, if you have any natural feeling for beauty of line, you will see, by comparing the two, that the shield form, mechanically constructed, is meagre and stiff; and also that it would be totally impossible to draw the curves which terminate the feather below by any mechanical law; much less the various curves of its filaments. Nor can we draw even so simple a form as that of a shield beautifully, by instruments. But we may come nearer, by a more complex construction, to beautiful form; and define at the same time the heraldic limits of the bearings. This finer method is given in Plate 2, on a scale twice as large, the shield being here two inches wide. And it is to be constructed as follows.

4. Draw the square A B C D, two inches on the side,

* The original drawings for all these plates will be put in the Sheffield Museum; but if health remains to me, I will prepare others of the same kind, only of different subjects, for the other schools of St. George. The engravings, by Mr. Allen's good skill, will, I doubt not, be better than the originals for all practical purposes; especially as my hand now shakes more than his, in small work.

with its diagonals A C, B D, and the vertical P Q through its centre O; and observe that, henceforward, I shall always use the words 'vertical' for 'perpendicular,' and 'level' for 'horizontal,' being shorter, and no less accurate.

Divide O Q, O P, each into three equal parts by the points, K, *a*; N, *d*.

Through *a* and *d* draw the level lines, cutting the diagonals in *b*, *c*, *e*, and *f*; and produce *b c*, cutting the sides of the square in *m* and *n*, as far towards *x* and *y* as you see will be necessary.

With centres *m* and *n*, and the equal radii *m a*, *n a*, describe semicircles, cutting *x y* in *x* and *y*. With centres *x* and *y*, and the equal radii *x n*, *y m*, describe arcs *m* V, *n* V, cutting each other and the line Q P, produced, in V.

The precision of their concurrence will test your accuracy of construction.

5. The form of shield B C V, thus obtained, is not a perfect one, because no perfect form (in the artist's sense of the word 'perfectness') can be drawn geometrically; but it approximately represents the central type of English shield.

It is necessary for you at once to learn the names of the nine points thus obtained, called 'honor-points,' by which the arrangement and measures of bearings are determined.

All shields are considered heraldically to be square in the field, so that they can be divided accurately into quarters.

I am not aware of any formerly recognized geometrical method of placing the honor-points in this field: that which I have here given will be found convenient for strict measurement of the proportions of bearings.

6. Considering the square A B C D as the field, and removing from it the lines of construction, the honor-points are seen in their proper places, in the lower part of the plate.

These are their names,—

a	Middle Chief	point.
b	Dexter Chief	
c	Sinister Chief	
K	Honor	
O	Fesse	
N	Numbril	
d	Middle Base	
e	Dexter Base	
f	Sinister Base	

I have placed these letters, with some trouble, as I think best for help of your memory.

The *a*, *b*, *c*; *d*, *e*, *f*, are, I think, most conveniently placed in upper and under series: I could not, therefore, put *f* for the Fesse point, but the O will remind you of it as the sign for a belt or girdle. Then K will stand for knighthood, or the honor-point, and putting N for the numbril, which is otherwise difficult to remember, we have, reading down, the syllable KON, the Teutonic beginning of KONIG or King, all which may be easily remembered.

And now look at the first plate of the large Oxford series.* It is engraved from my free-hand drawing in

* See notice of this series in Preface.

the Oxford schools; and is to be copied, as that drawing is executed, with pencil and color.

In which sentence I find myself face to face with a difficulty of expression which has long teased me, and which I must now conclusively, with the reader's good help, overcome.

7. In all classical English writing on art, the word 'pencil,' in all classical French writing the word 'pinceau,' and in all classical Italian writing the word 'pennello,' means the painter's instrument, the brush.*

It is entirely desirable to return, in England, to this classical use with constant accuracy, and resolutely to call the black-lead pencil, the 'lead-crayon;' or, for shortness, simply 'the lead.' In this book I shall generally so call it, saying, for instance, in the case of this diagram, "draw it first with the lead." 'Crayon,' from 'craie,' chalk, I shall use instead of 'chalk;' meaning when I say black crayon, common black chalk; and when I say white crayon, common white chalk; while I shall use indifferently the word 'pencil' for the instrument whether of water-color or oil painting.

8. Construct then the whole of this drawing, Plate 1, Oxford series, first with a light lead line; then take an ordinary† camel's-hair pencil, and with free hand follow

* The Latin 'penicillum' originally meant a 'little tail,' as of the ermine. My friend Mr. Alfred Tylor informs me that Newton was the first to apply the word to light, meaning a pointed group of rays.

† That is to say, not a particularly small one; but let it be of good quality. Under the conditions of overflowing wealth which reward our national manufacturing industry, I find a curious tendency in my pupils to study economy especially in colors and brushes. Every now and then I find a student using a brush which bends up when it

the lead lines in color. Indian red is the color generally to be used for practice, being cheap and sufficiently dark, but lake or carmine work more pleasantly for a difficult exercise like this.

9. In laying the color lines, you may go over and over again, to join them and make them even, as often as you like, but must not thicken the thin ones; nor interrupt the thickness of the stronger outline so as to confuse them at all with each other. Giotto, Durer, or Mantegna, would draw them at once without pause or visible error, as far as the color in the pencil lasted. Only two or three years ago I could nearly have done so myself, but my hand now shakes a little; the drawing in the Oxford schools is however very little retouched over the first line.

10. We will at this point leave our heraldry,* because

touches the paper, and remains in the form of a fish-hook. If I advise purchase of a better, he—or she—says to me, "Can't I do something with this?" "Yes,—something, certainly. Perhaps you may paste with it; but you can't draw. Suppose I was a fencing-master, and you told me you couldn't afford to buy a foil,—would you expect me to teach you to fence with a poker?"

* Under the general influence of Mr. Gradgrind, there has been lately published a book of "Heraldry founded on facts" (The Pursuivant of Arms,—Chatto & Windus), which is worth buying, for two reasons: the first, that its 'facts' are entirely trustworthy and useful (well illustrated in minor woodcut also, and, many, very curious and new); the second, that the writer's total ignorance of art, and his education among vulgar modernisms, have caused him to give figure illustrations, wherever he draws either man or beast, as at pages 62 and 106, whose horrible vulgarity will be of good future service as a type to us of the maximum in that particular. But the curves of shields are, throughout, admirably chosen and drawn, to the point mechanically possible.

we cannot better the form of our shield until we can draw lines of more perfect, that is to say, more varied and interesting, curvature, for its sides. And in order to do this we must learn how to construct and draw curves which cannot be drawn with any mathematical instrument, and yet whose course is perfectly determined.

CHAPTER IV.

FIRST EXERCISE IN CURVES. THE CIRCLE.

1. Among the objects familiarly visible to us, and usually regarded with sentiments of admiration, few are more classically representative of Giotto's second figure, inscribed in his square, than that by common consent given by civilized nations to their pieces of money. We may, I hope, under fortunate augury, limit ourselves at first to the outline (as, in music, young students usually begin with the song) of Sixpence.

2. Supposing you fortunate enough to possess the coin, may I ask you to lay it before you on a stiff card. Do you think it looks round? It does not, unless you look exactly down on it. But let us suppose you do so, and have to draw its outline under that simple condition.

Take your pen, and do it then, beside the sixpence.

"You cannot?"

Neither can I. Giotto could, and perhaps after working due time under the laws of Fésole, you may be able to do it, too, approximately. If I were as young as you, I should at least encourage that hope. In the meantime you must do it ignominiously, with compasses. Take your pen-compasses, and draw with them a circle the size of a sixpence.*

* Not all young students can even manage their compasses; and it is well to get over this difficulty with deliberate and immediate effort.

3. When it is done, you will not, I hope, be satisfied with it as the outline of a sixpence.* For, in the first place, it might just as well stand for the outline of the moon; and in the second, though it is true, or accurate, in the mere quality of being a circle, either the space enclosed by the inner side of the black line must be smaller, or that enclosed by the outside larger, than the area of a sixpence. So the closer you can screw the compass-point, the better you will be pleased with your line: only it must always happen even with the most delicate line, so long as it has thickness at all, that its inner edge is too small, or its outer too large. It is best, therefore, that the

Hold your compasses upright, and lightly, by the joint at the top; fix one point quite firm, and carry the other round it any quantity of times without touching the paper, as if you were spinning a top without quitting hold of it. The fingers have to shift as the compasses revolve; and, when well practised, should do so without stopping, checking, or accelerating the motion of the point. Practise for five minutes at a time till you get skilful in this action, considering it equally disgraceful that the fixed point of the compasses should slip, or that it should bore a hole in the paper. After you are enough accustomed to the simple mechanism of the revolution, depress the second point, and draw any quantity of circles with it, large and small, till you can draw them throughout, continuously, with perfect ease.

* If any student object to the continued contemplation of so vulgar an object, I must pray him to observe that, vulgar as it may be, the idea of it is contentedly allowed to mingle with our most romantic ideals. I find this entry in my diary for 26th January, 1876: "To Crystal Palace, through squalor and rags of declining Dulwich: very awful. In palace afterwards, with organ playing above its rows of ghastly cream-colored amphitheatre seats, with 'SIXPENCE' in letters as large as the organist,—occupying the full field of sight below him. Of course, the names of Mendelssohn, Orpheus, Apollo, Julien, and other great composers, were painted somewhere in the panelling above. But the real inscription—meant to be practically, and therefore divinely, instructive—was 'SIXPENCE.'

error should be divided between these two excesses, and that the centre of the line should coincide with the contour of the object. In advanced practice, however, outline is properly to be defined as the narrowest portion which can be conveniently laid of a dark background round an object which is to be relieved in light, or of a light background round an object to be relieved in shade. The Venetians often leave their first bright outlines gleaming round their dark figures, after the rest of the background has been added.

4. The *perfect* virtue of an outline, therefore, is to be absolutely accurate with its inner edge, the outer edge being of no consequence. Thus the figures relieved in light on black Greek vases are first enclosed with a line of thick black paint about the eighth of an inch broad, afterwards melted into the added background.

In dark outline on white ground, however, it is often necessary to draw the extremities of delicate forms with lines which give the limit with their outer instead of their inner edge; else the features would become too large. Beautiful examples of this kind of work are to be seen in face-drawing, especially of children, by Leech, and Du Maurier, in 'Punch.'

Loose lines, doubled or trebled, are sometimes found in work by great, never by the greatest, masters; but these are only tentative; processes of experiment as to the direction in which the real outline is to be finally laid.

5. The fineness of an outline is of course to be estimated in relation to the size of the object it defines. A chalk sketch on a wall may be a very subtle outline of a large picture; though Holbein or Bewick would be able to draw a complete figure within the width of one of its

lines. And, for your own practice, the simplest instrument is the best; and the line drawn by any moderately well-cut quill pen, not crow quill, but sacred goose, is the means of all art which you have first to master; and you may be sure that, in the end, your progress in all the highest skill of art will be swift in proportion to the patience with which in the outset you persist in exercises which will finally enable you to draw with ease the outline of any object of a moderate size (plainly visible, be it understood, and firmly terminated),* with an unerring and continuous pen line.

6. And observe, once for all, there is never to be any scrawling, blotting, or splashing, in your work, with pen or any thing else. But especially with the pen, you are to avoid rapid motion, because you will be easily tempted to it. Remember, therefore, that no line is well drawn unless you can stop your hand at any point of it you choose. On the other hand, the motion must be consistent and continuous, otherwise the line will not be even.

7. It is not indeed possible to say with precision how fast the point may move, while yet the eye and fingers retain perfect attention and directing power over it. I have seen a great master's hand flying over the paper as fast as gnats over a pool; and the ink left by the light grazing of it, so pale, that it gathered into shade like gray lead; and yet the contours, and fine notes of character, seized with the accuracy of Holbein. But gift of this kind is a sign of the rarest artistic faculty and tact: you

* By 'firmly terminated,' I mean having an outline which *can* be drawn, as that of your sixpence, or a book, or a table. You can't outline a bit of cotton wool, or the flame of a candle.

need not attempt to gain it, for if it is in you, and you work continually, the power will come of itself; and if it is not in you, will never come; nor, even if you could win it, is the attainment wholly desirable. Drawings thus executed are always imperfect, however beautiful: they are out of harmony with the general manner and scheme of serviceable art; and always, so far as I have observed, the sign of some deficiency of earnestness in the worker. Whatever your faculty may be, deliberate exercise will strengthen and confirm the good of it; while, even if your natural gift for drawing be small, such exercise will at least enable you to understand and admire, both in art and nature, much that was before totally profitless or sealed to you.

8. We return, then, to our coin study. Now, if we are ever to draw a sixpence in a real picture, we need not think that it can always be done by looking down at it like a hawk, or a miser, about to pounce. We must be able to draw it lying anywhere, and seen from any distance.

So now raise the card, with the coin on it, slowly to the level of the eye, so as at last to look straight over its surface. As you do so, gradually the circular outline of it becomes compressed; and between the position in which you look down on it, seeing its outline as a circle, and the position in which you look across it, seeing nothing but its edge, there are thus developed an infinite series of intermediate outlines, which, as they approach the circle, resemble that of an egg, and as they approach the straight line, that of a rolling-pin; but which are all accurately drawn curves, called by mathematicians 'ellipses,' or curves that 'leave out' something; in this

first practice you see they leave out some space of the circle they are derived from.

9. Now, as you can draw the circle with compasses, so you can draw any ellipse with a bit of thread and two pins.* But as you cannot stick your picture over with pins, nor find out, for any given ellipse, without a long mathematical operation, where the pins should go, or how long the thread should be, there is now no escape for you from the necessity of drawing the flattened shape of the sixpence with free hand.

10. And, therefore, that we may have a little more freedom for it, we will take a larger, more generally attainable, and more reverendly classic coin; namely, the 'Soldo,' or solid thing, from whose Italian name, heroes who fight for pay were first called Soldiers, or, in English, Pennyworth-men. Curiously, on taking one by chance out of my pocket, it proves to be a Double Obolus (Charon's fare!—and back again, let us hope), or Ten Mites, of which two make a Five-thing. Inscribed to that effect on one side—

ΔΙΩΒΟΛΟΝ
ΙΟ
ΛΕΠΤΑ

while the other bears an effigy not quite so curly in the hair as an ancient Herakles, written around thus,—

ΓΕΩΡΓΙΟΣ Α
ΒΑΣΙΛΕΥΣ ΤΩΝ ΕΛΛΗΝΩΝ

I lay this on a sheet of white paper on the table; and,

* No method of drawing it by points will give a finely continuous line, until the hand is free in passing through the points.

the image and superscription being, for our perspective purposes, just now indifferent, I will suppose you have similarly placed a penny before you for contemplation.

11. Take next a sheet of moderately thick note-paper, and folding down a piece of it sharply, cut out of the folded edge a small flat arch, which, when you open the sheet, will give you an oval aperture, somewhat smaller than the penny.

Holding the paper with this opening in it upright, adjust the opening to some given point of sight, so that you see the penny exactly through it. You can trim the cut edge till it fits exactly, and you will then see the penny apparently painted on the paper between you and it, on a smaller scale.

If you make the opening no larger than a grain of oats, and hold the paper near you, and the penny two or three feet back, you will get a charming little image of it, very pretty and quaint to behold; and by cutting apertures of different sizes, you will convince yourself that you don't see the penny of any given size, but that you judge of its actual size by guessing at its distance, the real image on the retina of the eye being far smaller than the smallest hole you can cut in the paper

12. Now if, supposing you already have some skill in painting, you try to produce an image of the penny which shall look exactly like it, seen through any of these openings, beside the opening, you will soon feel how absurd it is to make the opening small, since it is impossible to draw with fineness enough quite to imitate the image seen through any of these diminished apertures. But if you cut the opening only a hair's-breadth less wide than the coin, you may arrange the paper close to it by put-

ting the card and penny on the edge of a book, and then paint the simple image of what you see (penny only, mind, not the cast shadow of it), so that you can't tell the one from the other; and that will be right, if your only object is to paint the penny. It will be right also for a flower, or a fruit, or a feather, or aught else which you are observing simply for its own sake.

13. But it will be *natural-history* painting, not great painter's painting. A great painter cares only to paint his penny while the steward gives it to the laborer, or his twopence while the Good Samaritan gives it to the host. And then it must be so painted as you would see it at the distance where you can also see the Samaritan.

14. *Perfectly*, however, at that distance. Not sketched or slurred, in order to bring out the solid Samaritan in relief from the aërial twopence.

And by being 'perfectly' painted at that distance, I mean, as it would be seen by the human eye in the perfect power of youth. That forever indescribable instrument, aidless, is the proper means of sight, and test of all laws of work which bear upon aspect of things for human beings.

15. Having got thus much of general principle defined, we return to our own immediate business, now simplified by having ascertained that our elliptic outline is to be of the width of the penny proper, within a hair's-breadth, so that, practically, we may take accurate measure of the diameter, and on that diameter practise drawing ellipses of different degrees of fatness. If you have a master to help you, and see that they are well drawn, I need not give you farther direction at this stage; but if not, and we are to go on by ourselves, we must have some more

compass work; which reserving for next chapter, I will conclude this one with a few words to more advanced students on the use of outline in study from nature.

16. I. Lead, or silver point, outline.

It is the only one capable of perfection, and the best of all means for gaining intellectual knowledge of form. Of the degrees in which shade may be wisely united with it, the drawings of the figure in the early Florentine schools give every possible example: but the severe method of engraved outline used on Etruscan metal-work is the standard appointed by the laws of Fésole. The finest application of such method may be seen in the Florentine engravings, of which more or less perfect facsimiles are given in my 'Ariadne Florentina.' Raphael's silver point outline, for the figure, and Turner's lead outline in landscape, are beyond all rivalry in abstract of graceful and essential fact. Of Turner's lead outlines, examples enough exist in the National Gallery to supply all the schools in England, when they are properly distributed.*

17. II. Pen, or woodcut, outline. The best means of primal study of composition, and for giving vigorous impression to simple spectators. The woodcuts of almost any Italian books towards 1500, most of Durer's (*a*),—all Holbein's; but especially those of the 'Dance of Death'

* My kind friend Mr. Burton is now so fast bringing all things under his control into good working order at the National Gallery, that I have good hope, by the help of his influence with the Trustees, such distribution may be soon effected.

(*a*) I have put the complete series of the life of the Virgin in the St. George's Museum, Sheffield.

(*b*), and the etchings by Turner himself in the 'Liber Studiorum,' are standards of it (*c*). With a light wash of thin color above, it is the noblest method of intellectual study of composition; so employed by all the great Florentine draughtsmen, and by Mantegna (*d*). Holbein and Turner carry the method forward into full chiaroscuro; so also Sir Joshua in his first sketches of pictures (*e*).

18. III. Outline with the pencil. Much as I have worked on illuminated manuscripts, I have never yet been able to distinguish, clearly, pencilled outlines from the penned rubrics. But I shall gradually give large examples from thirteenth century work which will be for beginners to copy with the pen, and for advanced pupils to follow with the pencil.

19. The following notes, from the close of one of my Oxford lectures on landscape, contain the greater part of what it is necessary farther to say to advanced students* on this subject

* I find this book terribly difficult to arrange; for if I did it quite rightly, I should make the exercises and instructions progressive and consecutive; but then, nobody would see the reason for them till we came to the end; and I am so encumbered with other work that I think it best now to get this done in the way likeliest to make each part immediately useful. Otherwise, this chapter should have been all about right lines only, and then we should have had one on the arrangement of right lines, followed by curves, and arrangement of curves.

(*b*) First edition, also in Sheffield Museum.

(*c*) 'Æsacus and Hesperie,' and 'The Falls of the Reuss,' in Sheffield Museum.

(*d*) 'The Triumph of Joseph.' Florentine drawing in Sheffield Museum.

(*e*) Two, in Sheffield Museum.

When forms, as of trees or mountain edges, are so complex that you cannot follow them in detail, you are to enclose them with a careful outside limit, taking in their main masses. Suppose you have a map to draw on a small scale, the kind of outline which a good geographical draughtsman gives to the generalized capes and bays of a country, is that by which you are to define too complex masses in landscapes.

An outline thus perfectly made, with absolute decision, and with a wash of one color above it, is the most masterly of all methods of light and shade study, with limited time, when the forms of the objects to be drawn are clear and unaffected by mist.

But without any wash of color, such an outline is the most valuable of all means of obtaining such memoranda of any scene as may explain to another person, or record for yourself, what is most important in its features; only when it is thus used, some modification is admitted in its treatment, and always some slight addition of shade becomes necessary in order that the outline may contain the utmost information possible. Into this question of added shade I shall proceed hereafter.

20. For the sum of present conclusions: observe that in all drawings in which flat washes of color are associated with outline, the first great point is entirely to suppress the influences of impatience and affectation, so that if you fail, you may know exactly in what the failure consists. Be sure that you spread your color as steadily as if you were painting a house wall, filling in every spot of white to the extremest corner, and removing every grain of superfluous color in nooks and along edges. Then when the tint is dry, you will be able to say that it is either too

warm or cold, paler or darker than you meant it to be. It cannot possibly come quite right till you have long experience; only, let there be no doubt in your mind as to the point in which it is wrong; and next time you will do better.

21. I cannot too strongly, or too often, warn you against the perils of affectation. Sometimes color lightly broken, or boldly dashed, will produce a far better instant effect than a quietly laid tint; and it looks so dexterous, or so powerful, or so fortunate, that you are sure to find everybody liking your work better for its insolence. But never allow yourself in such things. Efface at once a happy accident—let nothing divert you from the purpose you began with—nothing divert or confuse you in the course of its attainment; let the utmost strength of your work be in its continence, and the crowning grace of it in serenity.

And even when you know that time will not permit you to finish, do a little piece of your drawing rightly, rather than the whole falsely: and let the non-completion consist either in that part of the paper is left white, or that only a foundation has been laid up to a certain point, and the second colors have not gone on. Let your work be a good outline—or part of one; a good first tint—or part of one; but not, in any sense, a sketch; in no point, or measure, fluttered, neglected, or experimental. In this manner you will never be in a state of weak exultation at an undeserved triumph; neither will you be mortified by an inexplicable failure. From the beginning you will know that more than moderate success is impossible, and that when you fall short of that due degree, the reason may be ascertained, and a lesson learned.

As far as my own experience reaches, the greater part of the fatigue of drawing consists in doubt or disappointment, not in actual effort or reasonable application of thought; and the best counsels I have to give you may be summed in these—to be constant to your first purpose, content with the skill you are sure of commanding, and desirous only of the praises which belong to patience and discretion.

CHAPTER V.

OF ELEMENTARY FORM.

1. In the 15th paragraph of the preceding chapter, we were obliged to leave the drawing of our ellipse till we had done some more compass work. For, indeed, all curves of subtle nature must be at first drawn through such a series of points as may accurately define them; and afterwards without points, by the free hand.

And it is better in first practice to make these points for definition very distinct and large; and even sometimes to consider them rather as beads strung upon the line, as if it were a thread, than as mere points through which it passes.

2. It is wise to do this, not only in order that the points themselves may be easily and unmistakably set, but because all beautiful lines are beautiful, or delightful to sight, in *showing the directions in which material things may be wisely arranged, or may serviceably move.* Thus, in Plate 1, the curve which terminates the hen's feather pleases me, and ought to please *you*, better than the point of the shield, partly because it expresses such relation between the lengths of the filaments of the plume as may fit the feather to act best upon the air, for flight; or, in unison with other such softly inlaid armor, for covering.

3. The first order of arrangement in substance is that

of coherence into a globe; as in a drop of water, in rain, and dew,—or, hollow, in a bubble: and this same kind of coherence takes place gradually in solid matter, forming spherical knots, or crystallizations. Whether in dew, foam, or any other minutely beaded structure, the simple form is always pleasant to the human mind; and the 'pearl'—to which the most precious object of human pursuit is likened by its wisest guide—derives its delightfulness merely from its being of this perfect form, constructed of a substance of lovely color.

4. Then the second orders of arrangement are those in which several beads or globes are associated in groups under definite laws, of which of course the simplest is that they should set themselves together as close as possible.

Take, therefore, eight marbles or beads* about three quarters of an inch in diameter; and place successively two, three, four, etc., as near as they will go. You can but let the first two touch, but the three will form a triangular group, the four a square one, and so on, up to the octagon. These are the first general types of all crystalline or inorganic grouping: you must know their properties well; and therefore you must draw them neatly.

5. Draw first the line an inch long, which you have already practised, and set upon it five dots, two large and three small, dividing it into quarter inches,—A B, Plate 3. Then from the large dots as centres, through the small ones, draw the two circles touching each other, as at C.

* In St. George's schools, they are to be of pale rose-colored or amber-colored quartz, with the prettiest veins I can find it bearing: there are any quantity of tons of rich stone ready for us, waste on our beaches.

The triangle, equal-sided, each side half an inch, and the square, in the same dimensions, with their dots, and their groups of circles, are given in succession in the plate; and you will proceed to draw the pentagon, hexagon, heptagon, and octagon group, in the same manner, all of them half an inch in the side. All to be done with the lead, free hand, corrected by test of compasses till you get them moderately right, and finally drawn over the lead with common steel pen and ink.

The degree of patience with which you repeat, to perfection, this very tedious exercise, will be a wholesome measure of your resolution and general moral temper, and the exercise itself a discipline at once of temper and hand. On the other hand, to do it hurriedly or inattentively is of no use whatever, either to mind or hand.

6. While you are persevering in this exercise, you must also construct the same figures with your instruments, as delicately as you can; but complete them, as in Plate 4, by drawing semicircles on the sides of each rectilinear figure; and, with the same radius, the portions of circles which will include the angles of the same figures, placed in a parallel series, enclosing each figure finally in a circle.

7. You have thus the first two leading groups of what architects call Foils; *i.e.*, trefoils, quatrefoils, cinquefoils, etc., their French names indicating the original dominance of French design in their architectural use.

The entire figures may be best called 'Roses,' the word rose, or rose window, being applied by the French to the richest groups of them. And you are to call the point which is the centre of each entire figure the 'Rose-centre.' The arcs, you are to call 'foils;' the centres of the arcs, 'foil-centres;' and the small points where the arcs meet, 'cusps,' from cuspis, Latin for a point.

8. From the group of circle-segments thus constructed, we might at once deduce the higher forms of symmetrical (or equally measured *) architecture, and of symmetrical flowers, such as the rose, or daisy. But it will be better first, with only our simple groups of circles themselves, to examine the laws which regulate forms *not* equally measured in every direction.

In this inquiry, however, we should find our marbles run inconveniently about the table : we will there-

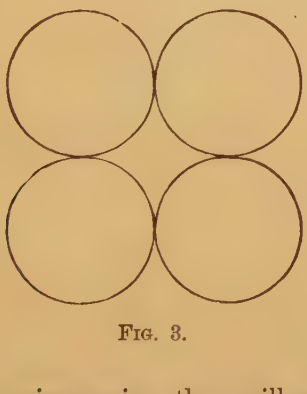

Fig. 3.

fore take to our coins again : they will serve admirably, as long as we keep clear of light and shade. We will at first omit the dual and trine groups, being too simple for interesting experiment ; and begin with Figure 4, Plate iii.

9. Take, accordingly, four sixpences, and lay them on

* As distinguished from the studiously varied design, executed in all its curves with the free hand, characteristic of less educated but more living schools. The south end of the western aisle of Bolton Abbey is an exquisite example of Early English of this kind.

a sheet of paper in this arrangement (Fig. 3), as evenly square as you can.

Now, lift one up out of its place, thus (Fig. 4), but still keeping it in contact with its next neighbor.*

You don't like that arrangement so well, do you? You ought not to like it so well. It is suggestive of one of the sixpences having got "liberty and independence." It is a form of dissolution.

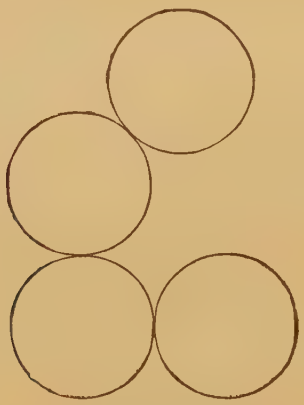

FIG. 4.

Next push up one of the coins below, so as to touch the one already raised, as in Figure 5.

You dislike this group even more than the last, I should think. *Two* of the sixpences have got liberty and independence now! Two, if referred to the first quatrefoil; or, if the three upper ones are considered as a staggering trefoil, three.

* If you have the book, compare the exercises in 'Ethics of the Dust,' page 67.

Push the lower one up to join them, then ; Figure 6.

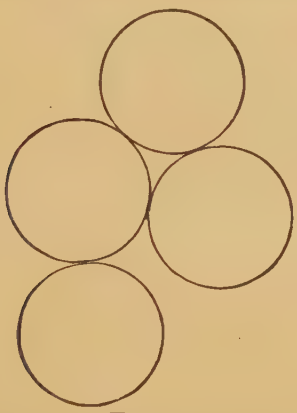

Fig. 5.

That is a little more comfortable, but the whole figure seems squinting or tumbling. You can't let it stay so !

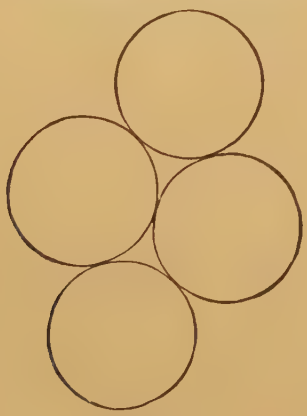

Fig. 6.

Put it upright, then ; Figure 7.

And now you like it as well as the original group, or, it may be, even better. You ought to like it better, for it is not only as completely under law as the original group, but it is under *two* laws instead of one, variously determining its height and width. The more laws any thing, or any creature, interprets, and obeys, the more beautiful it is (cæteris paribus).

10. You find then, for first conclusion, that you naturally like things to be under law; and, secondly, that

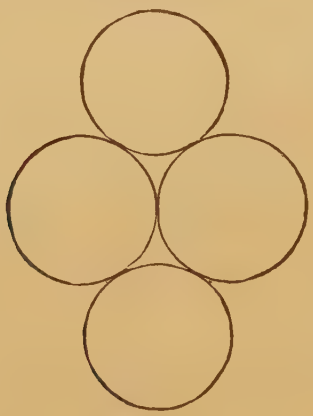

FIG. 7.

your feeling of the pleasantness in a group of separate, (and not living,) objects, like this, involves some reference to the great law of gravity, which makes you feel it desirable that things should stand upright, unless they have clearly some reason for stooping.

It will, however, I should think, be nearly indifferent to you whether you look at Figure 7 as I have placed it, or from the side of the page. Whether it is broad or

high will not matter, so long as it is balanced. But you see the charm of it is increased, in either case, by *in*equality of dimension, in one direction or another ; by the introduction, that is to say, of another law, modifying the first.

11. Next, let us take *five* sixpences, which we see will at once fall into the pleasant equal arrangement, Figure 5, Plate iii. ; but we will now break up that, by putting four together, as in our first quatre-foil here ; and the fifth on the top, (Figure 8).

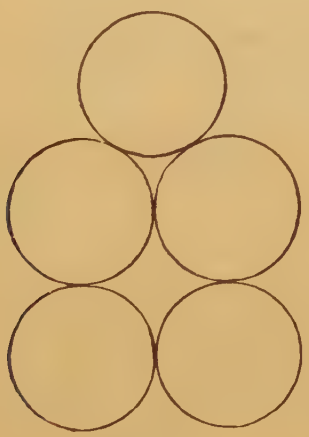

Fig. 8.

But you feel this new arrangement awkward. The uppermost circle has no intelligible connection with the group below, which, as a foundation, would be needlessly large for it. If you turn the figure upside-down, however, I think you will like it better ; for the lowest circle now seems a little related to the others, like a pendant. But the form is still unsatisfactory.

Take the group in Figure 7, above, then, and add the fifth sixpence to the top of that (Fig. 9).

Are you not better pleased? There seems now a unity of vertical position in three circles, and of level position in two: and you get also some suggestion of a pendant, or if you turn the page upside-down, of a statant,* cross.

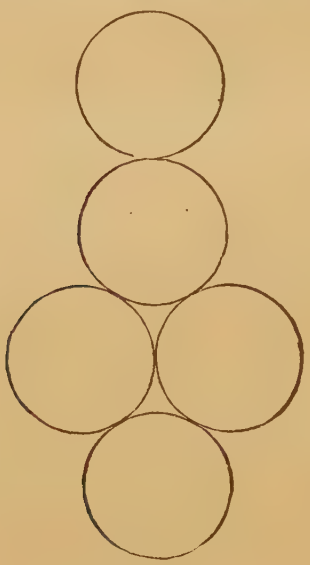

Fig. 9.

If, however, you now raise the two level circles, and the lowest, so as to get the arrangement in Figure 10, the

* Clearly, this Latin derivative is needed in English, besides our own 'standing;' to distinguish, on occasion, a permanently fixed 'state' of any thing, from a temporary pause. Stant, (as in extant,) would be merely the translation of 'standing;' so I assume a participle of the obsolete 'statare' to connect the adopted word with Statina, (the goddess,) Statue, and State.

result is a quite balanced group ; more pleasing, if I mistake not, than any we have arrived at yet, because we have here perfect order, with an unequal succession of magnitudes in mass and interval, between the outer circles.

12. By now gradually increasing the number of coins, we can deduce a large variety of groups, more or less pleasing, which you will find, on the whole, throw them-

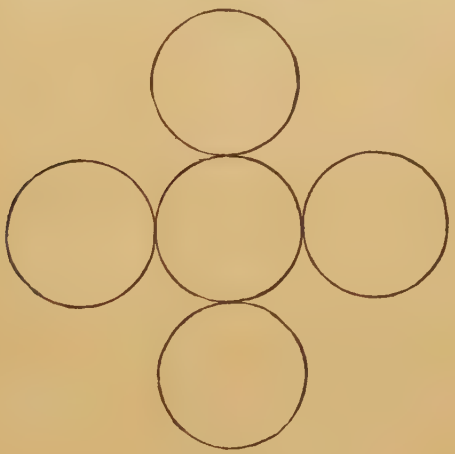

Fig. 10.

selves either into *garlanded* shapes,—seven, eight, and so on, in a circle, with differences in the intervals ;—or into *stellar* shapes, of which the simplest is the cross, and the more complex will be composed of five, six, seven, or more rays, of various length. Then farther, successive garlands may be added to the garlands, or crossing rays, producing chequers, if we have unlimited command of sixpences. But by no artifice of arrangement shall we be

able to produce any perfectly interesting or beautiful form, as long as our coins *remain of the same size.*

13. But now take some fourpenny and threepenny pieces also ; and, beginning with the cross, of five orbs (Fig. 10), try first a sixpence in the middle, with four fourpenny pieces round it ; and then a fourpenny piece in the middle, with four sixpences round it. Either group will be more pleasing to you than the original one : and by varying the intervals, and removing the surrounding coins to greater or less distances, you may pleasantly vary even this single group to a curious extent ; while if you increase the number of coins, and farther vary their sizes, adding shillings and half-crowns to your original resources, you will find the producible variety of pleasant figures quite infinite.

14. But, supposing your natural taste and feeling moderately good, you will always feel some of the forms you arrive at to be pleasanter than others ; for no explicable reason, but that there is relation between their sizes and distances which satisfies you as being under some harmonious law. Up to a certain point, I could perhaps show you logical cause for these preferences ; but the moment the groups become really interesting, their relations will be found far too complex for definition, and our choice of one or another can no more be directed by rule, or explained by reason, than the degrees of enjoyment can be dictated, or the reasons for admiration demonstrated, as we look from Cassiopeia to Orion, or from the Pleiades to Arcturus with his sons.

15. Three principles only you will find certain :

A, That perfect dependence of every thing on every thing else, is necessary for pleasantness.

B, That such dependence can only become perfect by means of differences in magnitude (or other qualities, of course, when others are introduced).

C, That some kind of balance, or 'equity,' is necessary for our satisfaction in arrangements which are clearly *subjected to human interference.*

You will be perhaps surprised, when you think of it, to find that this last condition—human interference,—is very greatly involved in the principles of contemplative pleasure; and that your eyes are both metaphysical, and moral, in their approval and blame.

Thus, you have probably been fastidious, and found it necessary to be so, before you could please yourself with enough precision in balance of coin against coin, and of one division of each coin-group against its fellow. But you would not, I think, desire to arrange any of the constellations I have just named, in two parallel parts; or to make the rock-forms on one side of a mountain valley, merely the reversed images of those upon the other?

16. Yet, even among these, you are sensible of a kind of order, and rejoice in it; nay, you find a higher pleasure in the mystery of it. You would not desire to see Orion and the Pleiades broken up, and scattered over the sky in a shower of equal-sized stars, among which you could no more trace group, or line, or pre-eminence. Still less would you desire to see the stars, though of different magnitudes, arrested on the vault of heaven in a chequer-pattern, with the largest stars at the angles, or appointed to rise and set in erected ranks, the same at zenith and horizon; never bowed, and never supine.

17. The beautiful passage in Humboldt's 'Personal

Narrative ' in which he describes the effect on his mind of the first sight of the Southern Cross, may most fitly close, confirm, and illumine, a chapter too wearisome; by which, however, I trust that you will be led into happier trust in the natural likings and dislikings which are the proper groundwork of taste in all things, finding that, in things *directly prepared for the service of men*, a quite palpable order and symmetry are felt by him to be beautiful; but in the things which involve interests wider than his own, the mystery of a less comprehensible order becomes necessary for their sublimity, as, for instance, the forms of mountains, or balances of stars, expressing their birth in epochs of creation during which man had no existence, and their functions in preparing for a future state of the world, over which he has no control.

"We saw distinctly for the first time the Cross of the South only, in the night of the 4th and 5th of July, in the sixteenth degree of latitude; it was strongly inclined, and appeared from time to time between the clouds, the centre of which, furrowed by uncondensed lightnings, reflected a silver light.

"*If a traveller may be permitted to speak of his personal emotions*,* I shall add, that in this night I saw one of the reveries of my earliest youth accomplished.

* * * * * *

"At a period when I studied the heavens, *not with the intention of devoting myself to astronomy*, but only to acquire *a knowledge of the stars*,† I was agitated by a

* I italicise, because the reserve of the Personal Narrative, in this respect, is almost majestic; and entirely exemplary as compared with the explosive egotism of the modern tourist.

† Again note the difference between modestly useful, and vainly ambitious, study.

fear unknown to those who love a sedentary life. It seemed painful to me to renounce the hope of beholding those beautiful constellations which border the southern pole. Impatient to rove in the equinoctial regions, I could not raise my eyes toward the starry vault without thinking of the Cross of the South, and without recalling the sublime passage of Dante, which the most celebrated commentators have applied to this constellation :

> 'Io mi volsi a man destra, e posi ment.
> All' altro polo ; e vidi quattro stelle
> Non viste mai fuor ch' alla prima gente
> Goder parea lo ciel di lor fiammelle ;
> O settentrional vedovo sito,
> Poi che privato se' di mirar quelle !'

"The two great stars which mark the summit and the foot of the Cross having nearly the same right ascension, it follows hence that the constellation is almost perpendicular at the moment when it passes the meridian. This circumstance is known to every nation that lives beyond the tropics, or in the southern hemisphere. It has been observed at what hour of the night, in different seasons, the Cross of the South is erect, or inclined. It is a time-piece that advances very regularly near four minutes a day ; and no other group of stars exhibits, to the naked eye, an observation of time so easily made. How often have we heard our guides exclaim, in the savannahs of the Venezuela, or in the desert extending from Lima to Truxillo, 'Midnight is past, the Cross begins to bend !' How often those words reminded us of that affecting scene where Paul and Virginia, seated near the source of the river of Latainers, conversed together for the last time, and where the old man, at the sight of the Southern Cross, warns them that it is time to separate !"

CHAPTER VI.

OF ELEMENTARY ORGANIC STRUCTURE.

1. Among the various arrangements made of the coins in our last experiment, it appeared that those were on the whole pleasantest which fell into some crosslet or stellar disposition, referred to a centre. The reader might perhaps suppose that, in making him feel this, I was preparing the way for assertion of the form of the cross, as a beautiful one, for religious reasons. But this is not so. I have given the St. George's cross for first practice, that our art-work might be thus early associated with the other studies of our schools ; but not as in any wise a dominant or especially beautiful form. On the contrary, if we reduce it into perfectly simple lines, the pure cross (a stellar group of four lines at right angles) will be found to look meagre when compared with the stellar groups of five, six, or seven rays ; and, in fact, its chief use, when employed as a decoration, is not in its possession of any symbolic or abstract charm, but as the simplest expression of accurate, and easy, mathematical division of space. It is thus of great value in the decoration of severe architecture, where it is definitely associated with square masonry : but nothing could be more painful than its substitution, in the form of tracery bars, for the stellar tracery of any fine rose window ; though, in such a position, its symbolic office would be perfect. The most imaginative and re-

ligious symbolist will, I think, be surprised to find, if he thus tries it fairly, how little symbolism can please, if physical beauty be refused.

2. Nor do I doubt that the author of the book on heraldry above referred to,* is right in tracing some of the earliest forms of the heraldic cross itself "to the metal clamps or braces required to strengthen and protect the long, kite-shaped shield of the eleventh and twelfth centuries." The quartering of the field, which afterwards became the foundation of the arrangement of bearings, was thus naturally suggested by the laws of first construction. But the 'Somerset Herald' pushes his modern mechanics too far, when he confuses the Cross Fleury with an "ornamental clamp"? (p. 49). It is directly traceable to the Byzantine Fleur-de-lys, and that to Homer's Iris.

3. So also with respect to the primary forms of crystals, the pleasure of the eye in perceiving that the several lines of a group may be traced to some common centre is partly referable to our mere joy in orderly construction: but, in our general judgment of design, it is founded on our sense of the nature of radiant light and heat as the strength of all organic life, together with our interest in noticing either growth from a common root in plants, or dependence on a nervous or otherwise vital centre in animal organism, indicating not merely order of construction, but process or sequence of animation.

4. The smallest number of lines which can completely express this law of radiation† is five; or if a completely

* 'Pursuivant of Arms,' p. 48.

† The groups of three, though often very lovely, do not clearly express radiation, but simply cohesion; because by merely crowding

opposite symmetry is required, six ; and the families of all the beautiful flowers prepared for the direct service and delight of man are constructed on these two primary schemes,—the rose representing the cinqfold radiation, and the lily the sixfold, (produced by the two triangles of the sepals and petals, crossed, in the figure called by the Arabs 'Solomon's Seal') ; while the fourfold, or cruciform, are on the whole restricted to more servile utility. One plant only, that I know of, in the Rose family,—the tormentilla,—subdues itself to the cruciform type with a grace in its simplicity which makes it, in mountain pastures, the fitting companion of the heathbell and thyme.

5. I shall have occasion enough, during the flower study carried on in 'Proserpina,' to analyze the laws of stellar grouping in flowers. In this book I shall go on at once to the more complex forms produced by radiation under some continually altering force, either of growth from a root, or of motion from some given point under given law.

We will therefore return to our feather from the hen's wing, and try to find out, by close examination, why we think it, and other feathers, pretty.

6. You must observe first that the feathers of all birds fall into three great classes :

(1) The Feathers for Clothing.
(2) The Feathers for Action.
(3) The Feathers for Ornament.

(1) Feathers for clothing are again necessarily divided into (A) those which clothe for warmth, (down,) which are

three globes close to each other, you at once get a perfect triune form ; but to put them in a circle of five or more, at equal distances from a centre, requires an ordering and proportionate force.

the birds' blankets and flannel ; and (B) those which clothe it for defence against weather or violence ; these last bearing a beautiful resemblance partly to the tiles of a house, partly to a knight's armor. They are imbricated against rain and wind, like tiles ; but they play and move over each other like mail, actually becoming effective armor to many of the warrior birds ; as in the partial protection of others from impact of driven boughs, or hail, or even shot.

(2) Feathers for action. These are essentially, again, either (A) feathers of force, in the wing, or (B) of guidance, in the tail, and are the noblest in structure which the bird possesses.

(3) Feathers for ornament. These are, again, to be divided into (A), those which modify the bird's form, (being then mostly imposed as a crest on the head, or expanded as a fan at the tail, or floating as a train of ethereal softness,) and (B) those which modify its color ; these last being, for the most part, only finer conditions of the armor feathers on the neck, breast, and back, while the force-feathers usually are reserved and quiet in color, though more or less mottled, clouded, or barred.

7. Before proceeding to any closer observation of these three classes of feathers, the student must observe generally how they must *all* be modified according to the bird's size. Chiefly, of course, the feathers of action, since these are strictly under physical laws determining the scale of organic strength. It is just as impossible for a large bird to move its wings with a rapid stroke, as for the sail of a windmill, or of a ship, to vibrate like a lady's fan. Therefore none but small birds can give a vibratory (or insect-like) motion to their wings. On the other hand, none but large birds can *sail* without stroke, because

small wings can not rest on a space of air large enough to sustain the body.

8. Therefore, broadly, first of all, birds range—with relation to their flight—into three great classes: (A) the *sailing* birds, who, having given themselves once a forward impulse, can rest, merely with their wings open, on the winds and clouds; (B) the properly so-called *flying* birds, who must *strike* with their wings, no less to sustain themselves than to advance; and, lastly, (C) the *fluttering* birds, who can keep their wings quivering like those of a fly, and therefore pause at will, in one spot in the air, over a flower, or over their nest. And of these three classes, the first are necessarily large birds (frigate-bird, albatross, condor, and the like); the second, of average bird-size, falling chiefly between the limiting proportions of the swallow and seagull; for a smaller bird than the swift has not power enough over the air, and a larger one than the seagull has not power enough over its wings, to be a perfect flyer.

Finally, the birds of vibratory wing are all necessarily minute, represented chiefly by the humming-birds; but sufficiently even by our own smaller and sprightlier pets: the robin's quiver of his wing in leaping, for instance, is far too swift to be distinctly seen.

9. These are the three main divisions of the birds for whom the function of the wing is mainly *flight*.

But to us, human creatures, there is a class of birds more pathetically interesting—those in whom the function of the wing is essentially, not flight, but the protection of their young.

Of these, the two most familiar to us are the domestic fowl and the partridge; and there is nothing in arrange-

ment of plumage approaching the exquisiteness of that in the vaulted roofs of their expanded *covering* wings; nor does any thing I know in decoration rival the consummate art of the minute cirrus-clouding of the partridge's breast.

10. But before we can understand either the structure of the striking plumes, or the tincture of the decorative ones, we must learn the manner in which all plumes whatsoever are primarily made.

Any feather—(as you know, but had better nevertheless take the first you can find in your hand to look at, as you read on)—is composed of a central quill, like the central rib of a leaf, with fine rays branching from it on each side, united, if the feather be a strong one, into a more or less silky tissue or 'web,' as it has hitherto been called by naturalists.* Not unreasonably, in some respects; for

* So far as one can make out what they call any thing! The following lucid passage is all that in the seven hundred closely printed pages of Mr. Swainson's popular ornithology, the innocent reader will find vouchsafed to him in description of feathers (§ 71, p. 77, vol. 1):—"The regular *external feathers* of the body, like those of the wings and tail, are very differently constructed from such as are called the down; they are externally composed of three parts or substances: 1. The down; 2. The laminæ, *or webs* (!); and, 3. The shaft, or quill, on the sides of which the two former are arranged. The downy laminæ, or webs of these feathers, are very different from the substance we have just described, since they not only have a distinct shaft of their own, but the laminæ which spring from both sides of it are perceptibly and regularly arranged, although, from being devoid of all elasticity, (!) like true down, they do not unite and repose parallel to each other. The soft downy laminæ are always situated close to the insertion of the quill into the skin; and although, for obvious reasons, they are more developed on those feathers which cover the body, they likewise exist on such as are employed in flight, as shown in the quill of a goose; and as they are always concealed from sight when the plumage is uninjured, and are not exposed to the action of the air, so they are al-

truly it is a woven thing, with a warp and woof, beautiful as Penelope's or Arachne's tapestry; but with this of marvel beyond beauty in it, that it is a web which reweaves itself when you tear it! Closes itself as perfectly as a sea-wave torn by the winds, being indeed nothing else than a wave of silken sea, which the winds trouble enough; and fret along the edge of it, like fretful Benacus at its shore; but which, tear it as they will, closes into its unruffled strength again in an instant.

11. *There* is a problem for you, and your engines,—good my Manchester friends! What with Thirlmere to fill your boilers, and cotton grown by free niggers, surely the forces of the universe must be favorable to you,—and, indeed, wholly at your disposal. Yet of late I have heard that your various tissues tear too easily;—how if you could produce them such as that they could mend themselves again without help from a sewing-machine! (for I find my glove-fingers, sewn up the seam by that great economist of labor, split down all at once like walnut-shells).

ways colorless. The third part of a feather consists in the true *external* laminæ, which are arranged in two series, one on each side the shaft; and these sides are called the *external* and the *internal* (! !) webs. To outward appearance, the form of the laminæ which compose these webs appears to be much the same as that of down, which has been just described, with this difference only, that the laminæ are stronger and elastic, and seem to stick together, and form a parallel series, which the downy laminæ do not. Now, this singular adhesiveness is seen by the microscope to be occasioned by the filaments on each side of these laminæ being hooked into those of the next laminæ, so that one supports the other in the same position; while their elasticity (!) makes them return to their proper place in the series, if by any accident they are discomposed. This will be sufficient to give the reader a correct idea of the general construction of a feather, without going into further details on the microscopic appearance of the parts."

But even that Arabian web which could be *packed* in a walnut-shell would have no chance of rivalling with yours if you could match the delicate spirit that weaves—a sparrow's wing. (I suppose you have no other birds to look at now—within fifty miles.)

However, from the bodies of birds, plucked for eating —or the skins of them, stuffed for wearing, I do not doubt but the reader, though inhabitant of modern English towns, may still possess himself, or herself, of a feather large enough to be easily studied ;* nay, I believe British Law still indites itself with the legitimate goose-feather. If that be attainable, with grateful reverence to law, in general, and to real Scripture, which is only possible with quill or reed ; and to real music, of Doric eagerness, touched of old for the oaks and rills, while the still morn went out with sandals gray,—we will therewith begin our inquiry into the weaving of plumes.

12. And now, for convenience of description, observe, that as all feathers lie backwards from the bird's head towards its tail, when we hold one in our hand by the point of the quill so as to look at its upper surface, we are virtually looking from the bird's head towards the tail of it : therefore, unless with warning of the contrary, I shall always describe the feathers which belong to the bird's right side, which, when we look down on its back and wing, with the head towards us, curve for the most part with the convex edge to our own left ; and when we look down on its throat and breast, with the head towards us, curve for the most part with the convex edge to our right.

* My ingenious friend, Mr. W. E. Dawes, of 72 Denmark Hill, will attend scrupulously to a feather, to any orders sent him from Fésole.

13. Choosing, therefore, a goose-feather from the bird's right wing, and holding it with the upper surface upwards, you see it curves to your own right, with convex edge to the left; and that it is composed mainly of the rapidly tapering quill, with its two so-called 'webs,' one on each side, meeting in a more or less blunt point at the top, like that of a kitchen carving-knife.

14. But I do not like the word 'web' for these tissues of the feather, for two reasons: the first, that it would get confused with the word we *must* use for the membrane of the foot; and the second, that feathers of force continually resemble swords or scimitars, striking both with flat and edge; and one cannot rightly talk of striking with a web! And I have been a long time (this number of Fésole having, indeed, been materially hindered by this hesitation) in deciding upon any name likely to be acceptable to my readers for these all-important parts of the plume structure. The one I have at last fixed upon, 'Fret,'* will not on the instant approve itself to them; but they will be content with it, I believe, in use. I take it from the constant fretting or rippling of the surface of the tissue, even when it is not torn along its edge,† and one can fancy a sword 'fretted' at its edge, easily enough.

15. The two frets are composed, you see, each of—(I was going to write, innumerable; but they are quite numerable, though many,)—smaller feathers; for they are nothing less, each of them, than a perfect little feather in its own way. You will find it convenient to call these

* 'Vane' is used in the English translation of Cuvier; but would be too apt to suggest rotation in the quill, as in a weathercock.

† See 'Love's Meinie,' Lecture I., page 33.

the 'rays.' In a goose's feather there are from thirty to forty in an inch of the fret; three or four hundred, that is to say, on each side of the quill. You see—and much more, may feel—how firmly these plumelets fasten themselves together to form the continuous strength of silken tissue of the fret.

16. Pull one away from the rest, and you find it composed of a white piece of the substance of the quill, extended into a long, slightly hollowed strip, something like the awn of a grain of oats—each edge of this narrow white strip being fringed with an exquisitely minute series of minor points, or teeth, like the teeth of a comb, becoming softer and longer towards the end of the ray, where also the flat, chaff-like strip of quill becomes little more than a fine rod.

Again, for names clear and short enough to be pleasantly useful, I was here much at a loss, and cannot more satisfactorily extricate myself than by calling the awnlike shaft simply the 'Shaft;' and the fine points of its serrated edges, (and whatever, in other feathers, these become,) 'Barbs.'

17. If, with a sharp pair of scissors, you cut the two frets away from the quill, down the whole length of it, you will find the frets still hold together, inlaid, woven together by their barbs into a white soft riband,—feeling just like satin to the finger, and looking like it on the under surface, which is exquisitely lustrous and smooth. And it needs a lens of some power to show clearly the texture of the fine barbs that weave the web, as it used to be called, of the whole.

Nevertheless, in the goose feather, the rays terminate somewhat irregularly and raggedly; and it will be better now to take for further examination the plume of a more

strongly flying bird. I take that of the common seagull,* where, in exquisite gray and dark-brown, the first elements of variegation are also shown at the extremity of the plume.

18. And here the edge of the fret is rippled indeed, but not torn; the quill tapers with exquisite subtlety; and another important part of plumage occurs at the root of it. There the shafts of the rays loose their stiffness and breadth; they become mere threads, on which the barbs become long and fine like hairs; and the whole plumelet becomes a wavy, wild-wandering thing, each at last entangled with its fluttering neighbors, and forming what we call the 'down' of the feather, where the bird needs to be kept warm.

19. When the shafts change into these wandering threads, they will be called filaments; and the barbs, when they become fine detached hairs, will be called cilia. I am very sorry to have all this nomenclature to inflict at once; but it is absolutely needful, all of it; nor difficult to learn, if you will only keep a feather in your hand as you learn it. A feather always consists of the quill and its rays; a ray, of the shaft and its barbs. Flexible shafts are filaments; and flexible barbs, cilia.

20. In none of the works which I at present possess on ornithology, is any account given of the general form or nature of any of these parts of a plume; although of all subjects for scientific investigation, supremely serviceable to youth, this is, one should have thought, the nearest and most tempting, to any person of frank heart. To begin with it, we must think of all feathers first as exactly

* Larus Canus, (Linnæus,) 'White Seamew.' St. George's English name for it.

intermediate between the fur of animals and scales of fish. They are fur, made strong, and arranged in scales or plates, partly defensive armor, partly active instruments of motion or action.* And there are definitely three textures of this strengthened fur, variously pleasurable to the eye : the first, a dead texture like that of simple silk in its cocoon, or wool ; receptant of pattern colors in definite stain, as in the thrush or partridge ; secondly, a texture like that of lustrous shot silk, soft, but reflecting different colors and different lights, as in the dove, pheasant, and peacock ; thirdly, a quite brilliant texture, flaming like metal—nay, sometimes more brightly than any polished armor ; and this also reflective of different colors in different lights, as in the humming-bird. Between these three typical kinds of lustre, there is every gradation ; the tender lustre of the dove's plumage being intermediate between the bloomy softness of the partridge, and the more than rainbow iridescence of the peacock ; while the semi-metallic, unctuous, or pitchy lustre of the raven, is midway between the silken and metallic groups.

21. These different modes of lustre and color depend entirely on the structure of the barbs and cilia. I do not often invite my readers to use a microscope ; but for once, and for a little while, we will take the tormenting aid of it.

In all feathers used for flight, the barbs are many and

* Compare 'Love's Meinie,' Lecture I., pp. 28, 29 ; but I find myself now compelled to give more definite analysis of structure by the entirely inconceivable, (till one discovers it,) absence of any such analysis in books on birds. Their writers all go straight at the bones, like hungry dogs ; and spit out the feathers as if they were choked by them.

minute, for the purpose of locking the shafts well together. But in covering and decorative plumes, they themselves become principal, and the shafts subordinate. And, since of flying plumes we have first taken the seagull's wing feather, of covering plumes we will first take one from the seagull's breast.

22. I take one, therefore, from quite the middle of a seamew's breast, where the frets are equal in breadth on each side. You see, first, that the whole plume is bent almost into the shape of a cup ; and that the soft white lustre plays variously on its rounded surface, as you turn it more or less to the light. This is the first condition of all beautiful forms. Until you can express this rounded surface, you need not think you can draw them at all.

Fig. 11.

23. But for the present, I only want you to notice the structure and order of its rays. Any single shaft with its lateral barbs, towards the top of the feather, you will find approximately of the form Fig. 11, the central shaft being so fine that towards the extremity it is quite lost sight of ; and the end of the rays being not formed by the extremity of the shaft, with barbs tapering to it, but by the forked separation, like the notch of an arrow, of the two ultimate barbs.

Which, please, observe to be indeed the normal form of all feathers, as opposed to that of leaves ; so that the end of a feather, however finely disguised, is normally as at A, Fig. 12 ; but of a leaf, as at B ; the arrow-like form of the feather being developed into the most lovely dupli-

cated symmetries of outline and pattern, by which, throughout, the color designs of feathers, and of floral petals, (which are the sign of the dual or married life in the flower, raising it towards the rank of animal nature,)

Fig. 12.

are distinguished from the color designs in minerals, and in merely wood-forming, as opposed to floral, or seed-forming, leaves.

24. You will observe also, in the detached ray, that the barbs lengthen downwards, and most distinctly from the middle downwards ; and now taking up the wing-feather again, you will see that its frets being constructed by the imbrication, or laying over each other like the tiles of a house, of the edges of the successive rays,—on the upper

Fig. 13.

or outer surface of the plume, the edges are overlaid *towards* the plume-*point*, like breaking waves over each other towards shore ; and of course, on the under surface, reversed, and overlaid towards the root of the quill.

You may understand this in a moment by cutting out roughly three little bits of cardboard, of this shape (Fig. 13), and drawing the directions of the barbs on them : I cut their ends square because they are too short to represent the lengths of real rays, but are quite long enough to illustrate their imbrication. Lay first the three of them in this position, (Fig. 14, A,) with their points towards you, one above the other ; then put the edge of the lowest *over* the edge of that above it, and the edge of that over the third, so as just to show the central shaft, and you will get three edges, with their barbs all vertical,

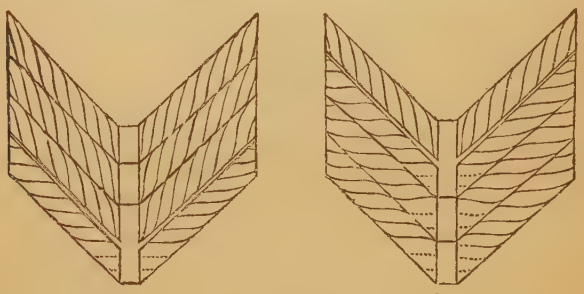

FIG. 14.

or nearly so : that is the structure of the plume's *upper* surface. Then put the edges of the farther off ones over the nearer, and you get three edges with their barbs all transverse, (Fig. 14, B,) which is the structure of the plume's *lower* surface. There are, of course, endless subtleties and changes of adjustment, but that is the first general law to be understood.

25. It follows, as a necessary consequence of this arrangement, that we may generally speak of the barbs which form the upper surface of the feather as the upper, or

longitudinal, barbs, meaning those which lie parallel to the quill, pointing to the end of the feather ; and of those which form the under surface of the feather as the lower, or transverse, barbs,—lying, that is to say, nearly transversely across the feather, at right angles to the quill. And farther, as you see that the quill shows itself clearly projecting from the under surface of the plume, so the shafts show themselves clearly projecting, in a corduroy fashion, on the under surface of the fret, the transverse barbs being seen only in the furrows between them.

26. Now, I should think, in looking carefully at this close structure of quill and shaft, you will be more and more struck by their resemblance to the beams and tiles of a roof. The feather is, in fact, a finely raftered and tiled roof to throw off wind and rain ; and in a large family of birds the wing has indeed chiefly a roof's office, and is not only raftered and tiled, but *vaulted*, for the roof of the nursery. Of which hereafter ; in the meantime, get this clearly into your head, that on the upper surface of the plume the tiles are overlaid from the bird's head backward—so as to have their edges *away* from the wind, that it may slide over them as the bird flies ;—and the furrows formed by the barbs lie parallel with the quill, so as to give the least possible friction. The under side of the plume, you may then always no less easily remember, has the *transverse* barbs ; and tile-edges towards the bird's head. The beauty and color of the plume, therefore, depend mainly on the formation of the longitudinal barbs, as long as the fret is close and firm. But it is kept close and firm throughout only in the wing feathers ; expanding in the decorative ones, under entirely different conditions.

27. Looking more closely at your seamew's breast-feather, you will see that the rays lock themselves close only in the middle of it; and that this close-locked space is limited by a quite definite line, outside of which the rays contract their barbs into a thick and close thread, each such thread detached from its neighbors, and forming a snowy fringe of pure white, while the close-locked part is toned, by the shades which show you its structure, into a silver gray.

Finally, at the root of the feather, not only do its own rays change into down, but underneath, you find a supplementary plume attached, composed of nothing else but down.

28. I find no account, in any of my books on birds, of the range of these supplementary under-plumes,—the bird's body-clothing. I find the seagull has them nearly all over its body, neck, breast, and back alike; the small feathers on the head are nothing else than down. But besides these, or in the place of these, some birds have down covering the skin itself; with which, however, the painter has nothing to do, nor even with the supplementary plumes: and already indeed I have allowed the pupil, in using the microscope at all, to go beyond the proper limits of artistic investigation. Yet, while we have the lens in our hand, put on for once its full power to look at the separate cilia of the down. They are all jointed like canes; and have, doubtless, mechanism at the joints which no eye nor lens can trace. The same structure, modified, increases the lustre of the true barbs in colored plumes.

One of the simplest of these I will now take, from the back of the peacock, for a first study of plume-radiation.

29. Its general outline is that of the Norman shield P A V B, Fig. 15 ; but within this outline, the frets are close-woven only within the battledore-shaped space P *a* V *b* ; and between A *a*, and *b* B, they expand their shafts into filaments, and their barbs into cilia, and become 'down.'

We are only able to determine the arrangement of the shafts within this closely-woven space P *a* V *b*, which you will find to be typically thus. The shafts remaining parallel most of the way up, towards the top of the plume, gradually throw themselves forward so as to get round without gap. But as, while they are thus getting round,

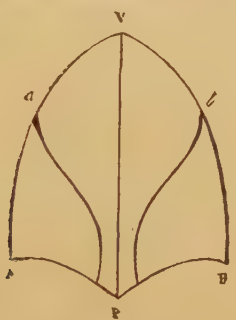

FIG. 15.

they are not fastened on a central pivot like the rays of a fan, but have still to take, each its *ascending* place on the sides of the quill, we get a method of radiation which you will find convenient henceforward to call 'plume-radiation,' (Fig. 16, B,) which is precisely intermediate between two other great modes of structure—shell-radiation, A, and frond-radiation, C.

30. You may perhaps have thought yourself very hardly treated in being obliged to begin your natural history drawing with so delicate a thing as a feather. But

you should rather be very grateful to me, for not having given you, instead, a bit of moss, or a cockle-shell! The last, which you might perhaps fancy the easiest of the three, is in reality quite hopelessly difficult, and in its ultimate condition, inimitable by art. Bewick can engrave feathers to the point of deceptive similitude; and Hunt can paint a bird's-nest built of feathers, lichen, and moss. But neither the one nor the other ever attempted to render the diverging lines which have their origin in the hinge of the commonest bivalve shell.

31. These exactly reverse the condition of frond radiation; in that, while the frond-branch is thick at the

Fig. 16.

origin, and diminishes to the extremity, the shell flutings, infinitely minute at the origin, expand into vigorous undulation at the edge. But the essential point you have now to observe is, that the shell radiation is from a central *point*, and has no supporting or continuous stem; that the plume radiation is a combination of stem and centre; and that the frond radiation has a stem throughout, all the way up. It is to be called frond, not tree, radiation, because trees in great part of their structure are like plumage, whereas the fern-frond is entirely and accurately distinct in its structure.

32. And now, at last, I draw the entire feather as well as I can in lampblack, for an exercise to you in that material; putting a copy of the first stage of the work below it, Plate V. This lower figure may be with advantage copied by beginners; with the pencil and rather dry lampblack, over slight lead outline; the upper one is for advanced practice, though such minute drawing, where the pattern is wrought out with separate lines, is of course only introductory to true painter's work. But it is the best possible introduction, being exactly intermediate between such execution as Durer's, of the wing in the greater Fortune, and Turner's or Holbein's with the broad pencil,—of which in due time.

33. Respecting the two exercises in Plate V., observe, the lower figure is not an outline of the feather, to be filled up; it is the first stage of the drawing completed above it. In order to draw the curves of the shafts harmoniously, you must first put in a smaller number of guiding lines, and then fill in between. But in this primary state, the radiant lines cannot but remind you, if you are at all familiar with architecture, of a Greek 'honey-suckle' ornament, the fact being that the said ornament has nothing at all to do with honey-suckles; but is a general expression of the radiate organic power of natural forms, evermore delightful to human eyes; and the beauty of it depends on just as subtle care in bringing the curves into harmonious flow, as you will have to use in drawing this plume.

34. Nevertheless, that students possessing some already practised power may not be left without field for its exercise, I have given in Plate VI. an example of the use of ink and lampblack with the common pen and broad wash.

The outline is to be made with common ink in any ordinary pen—steel or quill does not matter, if not too fine—and, after it is thoroughly dry, the shade put on with a single wash, adding the necessary darks, or taking out light with the dry brush, as the tint dries, but allowing no retouch after it is once dry. The reason of this law is, first, to concentrate the attention on the fullest possible expression of forms by the tint first laid, which is always the pleasantest that *can* be laid, and, secondly, that the shades may be all necessarily gradated by running into the wet tint, and no edge left to be modified afterwards. The outline, that it may be indelible, is made with common ink; its slight softening by the subsequent wash being properly calculated on: but it must not be washed twice over.

35. The exercise in the lower figure of Plate I. is an example of Durer's manner; but I do not care to compel the pupil to go through much of this, because it is always unsatisfactory at its finest. Durer himself has to indicate the sweep of his plume with a current external line; and even Bewick could not have done plume patterns in line, unless he had had the advantage of being able to cut out his white; but with the pencil, and due patience in the use of it, every thing linear in plumes may be rightly indicated, and the pattern followed all the time.

The minute moss-like *fringe* at the edge of the feather in Plate V. introduces us, however, to another condition of decorative plumage, which, though not bearing on our immediate subject of radiation, we may as well notice at once.

If you examine a fine tail-feather of the peacock, above the eye of it, you will find a transparent space formed by

the *cessation* of the barbs along a certain portion of the shaft. On the most scintillant of the rays, which have green and golden barbs, and in the lovely blue rays of the breast-plumes, these cessations of the barbs become alternate cuts or jags ; while at the end of the long brown wing-feathers, they *comply* with the colored pattern : so that, at the end of the clouded plume, its pattern, instead of being constructed of brown and *white* barbs, is constructed of brown—and *no* barbs,—but vacant spaces. The decorative use of this transparency consists in letting the color of one plume *through* that of the other, so that not only every possible artifice is employed to obtain the most lovely play of color on the plume itself ; but, with mystery through mystery, the one glows and flushes through the other, like cloud seen through cloud. But now, before we can learn how either glow, or flush, or bloom are to be painted, we must learn our alphabet of color itself.

CHAPTER VII.

OF THE TWELVE ZODIACAL COLORS.

1. In my introductory Oxford lectures you will find it stated (§ 130) that "*all objects appear to the eye merely as masses of color;*" and (§§ 134, 175) that shadows are as full in color as lights are, every possible shade being a light to the shades below it, and every possible light, a shade to the lights above it, till you come to absolute darkness on one side, and to the sun on the other. Therefore, you are to consider all the various pieces either of shaded or lighted color, out of which any scene whatsoever is composed, simply as the patches of a Harlequin's jacket—of which some are black, some red, some blue, some golden; but of which you are to imitate every one, *by the same methods.*

2. It is of great importance that you should understand how much this statement implies. In almost all the received codes of art-instruction, you will be told that shadows should be transparent, and lights solid. You will find also, when you begin drawing yourselves, that your shadows, whether laid with lead, chalk, or pencil, will for the most part really look like dirt or blotches on the paper, till you cross-hatch or stipple them, so as to give them a look of network; upon which they instantly become more or less like shade; or, as it is called, 'transparent.' And you will find a most powerful and attrac-

tive school of art founded on the general principle of laying a literally transparent brown all over the picture, for the shade ; and striking the lights upon it with opaque white.

3. Now the statement I have just made to you (in § 1) implies the falseness of all such theories and methods.* And I mean to assert that falsity in the most positive manner. Shadows are not more transparent than lights, nor lights than shadows ; both are transparent, when they express space ; both are opaque, when they express substance ; and both are to be imitated in precisely the same manner, and with the same quality, of pigment. The only technical law which is indeed constant, and which requires to be observed with strictness, is precisely that the method *shall be* uniform. You may take a white ground, and lay darks on it, leaving the white for lights ; or you may take a dark ground, and lay lights on it, leaving the dark for darks : in either case you must go on as you begin, and not introduce the other method where it suits you. A glass painter must make his *whole* picture transparent ; and a fresco painter, his whole picture opaque.

4. Get, then, this plain principle well infixed in your minds. Here is a crocus—there is the sun—here a piece of coal—there, the hollow of the coal-scuttle it came out of. They are every one but patches of color,—some yellow, some black ; and must be painted in the same manner, with whatever yellow or black paint is handy.

5. Suppose it, however, admitted that lights and shades

* Essentially, the use of transparent brown by Rubens, (followed by Sir Joshua with asphaltum,) ruined the Netherland schools of color, and has rendered a school of color in England hitherto impossible.

are to be produced in the same manner ; we have farther to ask, what that manner may best be ?

You will continually hear artists disputing about grounds, glazings, vehicles, varnishes, transparencies, opacities, oleaginousnesses. All that talk is as idle as the east wind. Get a flat surface that won't crack,—some colored substance that will stick upon it, and remain always of the color it was when you put it on,—and a pig's bristle or two, wedged in a stick ; and if you can't paint, you are no painter ; and had better not talk about the art.

The one thing you have to learn—the one power truly called that of 'painting'—is to lay on any colored substance, whatever its consistence may be, (from mortar to ether,) *at once*, of the exact tint you want, in the exact form you want, and in the exact quantity you want. *That* is painting.

6. Now, you are well aware that to play on the violin well, requires some practice. Painting is playing on a color-violin, seventy-times-seven stringed, and inventing your tune as you play it ! That is the easy, simple, straightforward business you have to learn. Here is your catgut and your mahogany,—better or worse quality of both of course there may be,—Cremona tone, and so on, to be discussed with due care, in due time ;—you cannot paint miniature on the sail of a fishing-boat, nor do the fine work with hog's bristles that you can with camel's hair :—all these catgut and bristle questions shall have their place ; but, the primary question of all is—*can* you *play ?*

7. Perfectly, you never can, but by birth-gift. The entirely first-rate musicians and painters are born, like

Mercury;—their words are music, and their touch is gold; sound and color wait on them from their youth; and no practice will ever enable other human creatures to do any thing like them. The most favorable conditions, the most docile and apt temper, and the unwearied practice of life, will never enable any painter of merely average human capacity to lay a single touch like Gainsborough, Velasquez, Tintoret, or Luini. But to understand that the matter must still depend on practice *as well* as on genius,—that painting is not one whit less, but more, difficult than playing on an instrument,—and that your care as a student, on the whole, is not to be given to the quality of your piano, but of your touch,—this is the great fact which I have to teach you respecting color; this is the root of all excellent doing and perceiving.

And you will be utterly amazed, when once you begin to feel what color means, to find how many qualities which appear to result from peculiar method and material do indeed depend only on loveliness of execution; and how divine the law of nature is, which has so connected the immortality of beauty with patience of industry, that by precision and rightness of laborious art you may at last literally command the rainbow to stay, and forbid the sun to set.

8. To-day, then, you are to begin to learn your notes—to hammer out, steadily, your first five-finger exercises; and as in music you have first to play in true time, with stubborn firmness, so in color the first thing you have to learn is to lay it flat, and well within limits. You shall have it first within linear limits of extreme simplicity, and you must be content to fill spaces so enclosed, again

and again and again, till you are perfectly sure of your skill up to that elementary point.

9. So far, then, of the manner in which you are to lay your color ;—next comes the more debatable question yet, what kind of color you are thus to lay,—sober, or bright. For you are likely often to have heard it said that people of taste like subdued or dull colors, and that only vulgar persons like bright ones.

But I believe you will find the standard of color I am going to give you, an extremely safe one—the morning sky. Love *that* rightly with all your heart, and soul, and eyes ; and you are established in foundation-laws of color. The white, blue, purple, gold, scarlet, and ruby of morning clouds, are meant to be entirely delightful to the human creatures whom the ' clouds and light ' sustain. Be sure you are always ready to see *them*, the moment they are painted by God for you.

But you must not rest in these. It is possible to love them intensely, and yet to have no understanding of the modesty or tenderness of color.

Therefore, next to the crystalline firmament over you, the crystalline earth beneath your feet is to be your standard.

Flint, reduced to a natural glass containing about ten per cent of water, forms the opal ; which gives every lower hue of the prism in as true perfection as the clouds ; but not the scarlet or gold, both which are crude and vulgar in opal. Its perfect hues are the green, blue, and purple. Emerald and lapis-lazuli give central green and blue in fulness ; and the natural hues of all true gems, and of the marbles, jaspers, and chalcedonies, are types of intermediate tint ; the oxides of iron, especially, of reds. All

these earth-colors are curiously prepared for right standards : there is no misleading in them.

10. Not so when we come to the colors of flowers and animals. Some of these are entirely pure and heavenly ; the dove can contend with the opal, the rose with the clouds, and the gentian with the sky ; but many animals and flowers are stained with vulgar, vicious, or discordant colors. But all those intended for the service and companionship of man are typically fair in color ; and therefore especially the fruits and flowers of temperate climates ;— the purple of the grape and plum ; the red of the currant and strawberry, and of the expressed juices of these,—the wine that "giveth his color in the cup," and the "lucent syrup tinct with cinnamon." With these, in various subordination, are associated the infinitudes of quiet and harmonized color on which the eye is intended to repose ; the softer duns and browns of birds and animals, made quaint by figured patterns ; and the tender green and gray of vegetation and rock.

11. No science, but only innocence, gayety of heart, and ordinary health and common sense, are needed, to enable us to enjoy all these natural colors rightly. But the more grave hues, which, in the system of nature, are associated with danger or death, have become, during the later practice of art, pleasing in a mysterious way to the most accomplished artists : so that the greatest masters of the sixteenth century may be recognized chiefly by their power of producing beauty with subdued colors. I cannot enter here into the most subtle and vital question of the difference between the subdued colors of Velasquez or Tintoret, and the daubed gray and black of the modern

French school ;* still less into any analysis of the grotesque inconsistency which makes the foreign modern schools, generally, repaint all sober and tender pictures with glaring colors, and yet reduce the pure colors of landscape to

* One great cause of the delay which has taken place in the publication of this book has been my doubt of the proper time and degree in which study in subdued color should be undertaken. For though, on the one hand, the entirely barbarous glare of modern colored illustration would induce me to order practice in subdued color merely for antidote to it ; on the other, the affectation,—or morbid reality,—of delight in subdued color, are among the fatallest errors of semi-artists. The attacks on Turner in his greatest time were grounded in real feeling, on the part of his adversaries, of the solemnity in the subdued tones of the schools of classic landscape.

To a certain extent, therefore, the manner of study in color required of any student must be left to the discretion of the master, who alone can determine what qualities of color the pupil is least sensible to ; and set before him examples of brightness, if he has become affectedly grave,—and of subdued harmony, if he errs by crudeness and discord. But the general law must be to practise first in pure color, and then, as our sense of what is grave and noble in life and conduct increases, to express what feeling we have of such things in the hues belonging to them, remembering, however, always, that the instinct for grave color is not at all an index of a grave mind. I have had curious proof of this in my own experience. When I was an entirely frivolous and giddy boy, I was fondest of what seemed to me ' sublime ' in gloomy art, just in proportion as I was insensible to crudeness and glare in the bright colors which I enjoyed for their own sake : and the first old picture I ever tried to copy was the small Rembrandt in the Louvre, of the Supper at Emmaus. But now, when my inner mind is as sad as it is well possible for any man's to be, and my thoughts are for the most part occupied in very earnest manner, and with very grave subjects, my ideal of color is that which I now assign for the standard of St. George's schools,—the color of sunrise, and of Angelico.

' Why not, then, of the rainbow, simply ?

Practically, I *must* use those of the rainbow to begin with. But, for standards, I give the sunrise and Angelico, because the sun and he both use gold for yellow. Which is indeed an infinite gain ; if poor

drab and brown. In order to explain any of these phenomena, I should have first to dwell on the moral sense which has induced us, in ordinary language, to use the metaphor of 'chastity' for the virtue of beautifully subdued color; and then to explain how the chastity of Britomart or Perdita differs from the vileness of souls that despise love. But no subtle inquiries or demonstrations can be admitted in writing primal laws; nor will they ever be needed, by those who obey them. The things which are naturally pleasant to innocence and youth, will be forever pleasant to us, both in this life and in that which is to come; and the same law which makes the babe delight in its coral, and the girl in the carnelian pebble she gathers from the wet and shining beach, will still rule their joy within the walls whose light shall be "like a stone most precious, even like a jasper stone, clear as crystal."

12. These things, then, above named, without any debate, are to be received by you as *standards* of color: by admiration of which you may irrefragably test the rightness of your sense, and by imitation * of which you can form and order all the principles of your practice. The morning sky, primarily, I repeat; and that from the

Turner had only been able to use gold for yellow too, we had never heard any vulgar jests about him. But, in cloud-painting, nobody can use gold except the sun himself,—while, on angel's wings, it can but barely be managed, if you have old Etruscan blood in your fingers,—not here, by English ones, cramped in their clutch of Indian or Californian gold.

* 'Imitation'—I use the word advisedly. The last and best lesson I ever had in color was a vain endeavor to estimate the time which Angelico must have taken to paint a small amethyst on the breast of his St. Laurence.

dawn onwards. There are no grays nor violets which can come near the perfectness of a pure dawn ; no gradations of other shade can be compared with the tenderness of its transitions. Dawn, with the waning moon, (it is always best so, because the keen gleam of the thin crescent shows the full depth of the relative gray,) determines for you all that is lovely in subdued hue and subdued light. Then the passages into sunrise determine for you all that is best in the utmost glory of color. Next to these, having constant office in the pleasures of the day, come the colors of the earth, and her fruits and flowers ; the iron ochres being the standards of homely and comfortable red, always ruling the pictures of the greatest masters at Venice, as opposed to the vulgar vermilion of the Dutch ; hence they have taken the general name of *Venetian* red : then, gold itself, for standard of lustrous yellow, tempered so wisely with gray in the shades ; silver, of lustrous white, tempered in like manner ; marble and snow, of white pure, glowing into various amber and rose under sunlight : then the useful blossoms and fruits ;—peach and almond blossom, with the wild rose, of the paler reds ; the clarissas, of full reds, etc. ; and the fruits, of such hues modified by texture or bloom. Once learn to paint a peach, an apricot, and a greengage, and you have nothing more to know in the modes of color enhanced by texture. Corn is the standard of brown,—moss of green ; and in general, whatever is good for human life is also made beautiful to human sight, not by "association of ideas," but by appointment of God that in the bread we rightly break for our lips, we shall best see the power and grace of the Light he gave for our eyes.

13. The perfect order of the colors in this gentle glory

is, of course, normal in the rainbow,—namely, counting from outside to inside, red, yellow, and blue, with their combinations,*—namely, scarlet, formed by yellow with red ; green, formed by blue with yellow ; and purple, formed by red with blue.

14. But neither in rainbow, prism, nor opal, are any of these tints seen in separation. They pass into each other by imperceptible gradation, nor can any entirely beautiful color exist without this quality. Between each secondary, therefore, and the primaries of which it is composed, there are an infinite series of tints ; inclining on one side to one primary, on the other to the other ; thus green passes into blue through a series of bluish greens, which are of great importance in the painting of sea and sky ;—and it passes into yellow through a series of golden greens, which are of no less importance in painting earth and flowers. Now it is very tiresome to have to mix names as well as colors, and always say ' bluish green,' or ' reddish purple,' instead of having proper special names for these intermediate tints. Practically we have such names for several of them ; ' orange,' for instance, is the intermediate between scarlet and yellow ; ' lilac ' one of the paler tints between purple and red ; and ' violet ' that between purple and blue. But we must now have our code of names complete ; and that we may manage this more easily, we will put the colors first in their places.

* Strictly speaking, the rainbow is *all* combination ; the primary colors being only lines of transition, and the bands consisting of scarlet, green, and purple ; the scarlet being not an especially pure or agreeable one in its general resultant hue on cloud-gray. The green and violet are very lovely when seen over white cloud.

15. Take your sixpence again ; and, with that simple mathematical instrument, draw twelve circles of its size, or at least as closely by its edge as you can,* on a piece of Bristol board, so that you may be able to cut them out, and place them variously. Then take carmine, cobalt, gamboge, orange vermilion, and emerald green ; and, marking the circles with the twelve first letters of the alphabet, color '*a*' with pure gamboge, '*b*' with mixed gamboge and emerald green, '*c*' with emerald green, '*d*' with emerald green and cobalt, '*e*' with cobalt pure, '*f*' with two-thirds cobalt and one third carmine, '*g*' with equally mixed cobalt and carmine, '*h*' with two-thirds carmine and one-third cobalt, '*i*' with carmine pure, '*j*' with carmine and vermilion, '*k*' with vermilion, '*l*' with vermilion and gamboge.

16. But how is all this to be done smoothly and rightly, and how are the thirds to be measured ? † Well,—for the

* It is really in practice better to do this than to take compasses, which are nearly sure to slip or get pinched closer, in a beginner's hands, before the twelve circles are all done. But if you like to do it accurately, see Fig. 17, p. 89.

† I have vainly endeavored to persuade Messrs. Winsor and Newton to prepare for me powder-colors, of which I could direct half or a quarter grain to be mixed with a measured quantity of water ; but I have not given up the notion. In the meantime, the firm have arranged at my request a beginner's box of drawing materials,—namely, colors, brushes, ruler, and compasses fitted with pencil-point. (As this note may be read by many persons, hurriedly, who have not had time to look at the first number, I allow once more, but for the last time in this book, the vulgar use of the words 'pencil' and 'brush.') The working pencil and penknife should be always in the pocket, with a small sketch-book, which a student of drawing should consider just as necessary a part of his daily equipment as his watch or purse. Then the color-box, thus composed, gives him all he wants more. For the advanced student, I add the palette, with all needful mathematical in-

doing of it, I must assume, that in the present artistic and communicative phase of society, the pupil can, at some chance opportunity, see the ordinary process of washing with water-color ; or that the child in more happy circumstances may be allowed so to play with ' paints ' from its earliest years, as to be under no particular difficulty in producing a uniform stain on a piece of pasteboard. The quantity of pigment to be used cannot be yet defined ;—the publication of these opening numbers of Fésole has already been so long delayed that I want now to place them in the student's hand, with what easily explicable details I can give, as soon as possible ; and the plates requiring care in coloring by hand, which will finally be given as examples, are deferred until I can give my readers some general idea of the system to be adopted. But, for present need, I can explain all that is wanted without the help of plates, by reference to flower-tints ; not that the student is to be vexed by any comparisons of his work with *these*, either in respect of brilliancy or texture : if he can bring his sixpenny circles to an approximate resemblance of as many old-fashioned wafers, it is all that is required of him. He will not be able to do this with one coat of color ; and had better allow himself three or four than permit the tints to be uneven.

17. The first tint, pure gamboge, should be brought, as near as may be, up to that of the yellow daffodil,—the buttercup is a little too deep. In fine illumination, and in the best decorative fresco painting, this color is almost

struments and useful colors. I give *him* colors, of finest quality,—being content, for beginners, with what I find one of the best practical colorists in England, my very dear friend Professor Westwood, has found serviceable all his life,—children's colors.

exclusively represented by gold, and the student is to give it, habitually, its heraldic name of ‘ Or.’

The second tint, golden-green, which is continually seen in the most beautiful skies of twilight, and in sunlighted trees and grass, is yet unrepresented by any flower in its fulness ; but an extremely pale hue of it, in the primrose, forms the most exquisite opposition, in spring, to the blue of the wood-hyacinth ; and we will therefore keep the name, ‘ Primrose,’ for the hue itself.

The third tint, pure green, is, in heraldry, ‘ verd,’ on the shields of commoners, and ‘ Emerald ’ on those of nobles. We will take for St. George’s schools the higher nomenclature, which is also the most intelligible and convenient ; and as we complete our color zodiac, we shall thus have the primary and secondary colors named from gems, and the tertiary from flowers.

18. The next following color, however, the tertiary between green and blue, is again not represented distinctly by any flower ; but the blue of the Gentiana Verna is so associated with the pure green of Alpine pasture, and the color of Alpine lakes, which is precisely the hue we now want a name for, that I will call this beautiful tertiary ‘ Lucia ; ’ (that being the name given in Proserpina to the entire tribe of the gentians,) and especially true to our general conception of luminous power or transparency in this color, which the Greeks gave to the eyes of Athena.

19. The fifth color, the primary blue, heraldic ‘ azure,’ or ‘ sapphire,’ we shall always call ‘ Sapphire ; ’ though, in truth, the sapphire itself never reaches any thing like the intensity of this color, as used by the Venetian painters, who took for its representative pure ultramarine. But

it is only seen in perfect beauty in some gradations of the blue glass of the twelfth century. For ordinary purposes, cobalt represents it with sufficient accuracy.

20. The sixth color, the tertiary between sapphire and purple, is exactly the hue of the Greek sea, and of the small Greek iris, Homer's *ion*, commonly translated 'violet.' We will call it 'Violet;' our own flower of that name being more or less of the same hue, though paler. I do not know what the 'syrup of violets' was, with which Humboldt stained his test-paper, ('Personal Narrative,' i., p. 165,) but I am under the impression that an extract of violets may be obtained which will represent this color beautifully and permanently. Smalt is one of its approximate hues.

21. The seventh color, the secondary purple, is the deepest of all the pure colors; it is the heraldic 'purpure,' and 'jacinth;' by us always to be called 'Jacinth.' It is best given by the dark pansy; see the notes on that flower in the seventh number of Proserpina, which will I hope soon be extant.

22. The eighth color, the tertiary between purple and red, corresponds accurately to the general hue and tone of bell-heather, and will be called by us therefore 'Heath.' In various depths and modifications, of which the original tint cannot be known with exactness, it forms the purple ground of the most stately missals between the seventh and twelfth century, such as the Psalter of Boulogne. It was always, however, in these books, I doubt not, a true heath-purple, not a violet.

23. The ninth color, the primary red, heraldic 'gules' and 'ruby,' will be called by us always 'Ruby.' It is not represented accurately by any stable pigment; but

crimson lake, or, better, carmine, may be used for it in exercises ; and rose madder in real painting.

24. The tenth color, the tertiary between red and scarlet, corresponds to the most beautiful dyes of the carnation, and other deeper-stained varieties of the great tribe of the pinks. The mountain pink, indeed, from which they all are in justice named, is of an exquisitely rich, though pale, ruby : but the intense glow of the flower leans towards fiery scarlet in its crimson ; and I shall therefore call this tertiary, ' Clarissa,' the name of the pink tribe in Proserpina.

25. The eleventh color, the secondary scarlet, heraldic ' tenny ' and ' jasper,' is accurately represented by the aluminous silicas, colored scarlet by iron, and will be by us always called ' Jasper.'

26. The twelfth color, the tertiary between scarlet and gold, is most beautifully represented by the golden crocus,—being the color of the peplus of Athena. We shall call it ' Crocus ; ' thus naming the group of the most luminous colors from the two chief families of spring flowers, with gold (for the sun) between them.

This, being the brightest, had better be placed uppermost in our circle, and then, taking the rest in the order I have named them, we shall have our complete zodiac thus arranged. (Fig. 17.*)

* If you choose to construct this figure accurately, draw first the circle x y. of the size of a sixpence, and from its diameter x y, take the angles m a x, n a y, each = the sixth of the quadrant, or fifteen degrees. Draw the lines a b, a l, each equal to x y : and l and b are the centres of the next circles. Then the perpendiculars from m and n will cut the perpendicular from a in the centre of the large circle. And if you get it all to come right, I wish you joy of it.

27. However rudely the young student may have colored his pieces of cardboard, when he has placed them in contact with each other in this circular order, he will at once see that they form a luminous gradation, in which the up-

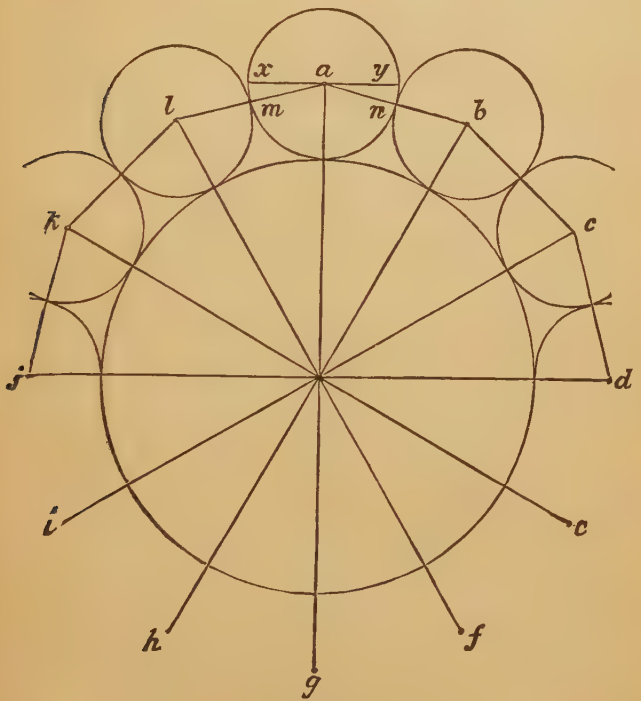

Fig. 17.

permost, Or, is the lightest, and the lowest, Jacinth, the darkest hue.

Every one of the twelve zodiacal colors has thus a pitch of intensity at which its special hue becomes clearly manifest, and above which, or below which, it is not clearly recog-

nized, and may, even in ordinary language, be often spoken of as another color. Crimson, for instance, and pink, are only the dark and light powers of the central Clarissa, and 'rose' the pale power of the central Ruby. A pale jacinth is scarcely ever, in ordinary terms, called purple, but 'lilac.'

28. Nevertheless, in strictness, each color is to be held as extending in unbroken gradation from white to black, through a series of tints, in some cases recognizable throughout for the same color; but in all the darker tones of Jasper, Crocus and Or, becoming what we call 'brown;' and in the darker tints of Lucia and Primrose passing into greens, to which artists have long given special titles of 'Sap,' 'Olive,' 'Prussian,' and the like.

29. After we have studied the modifications of shade itself, in neutral gray, we will take up the gradated scales of each color; dividing them always into a hundred degrees, between white and black; of which the typical or representative hue will be, in every one of the zodiacal colors, at a different height in the scale—the representative power of Or being approximately 20; of Jasper, 30; of Ruby, 50; and of Jacinth, 70. But, for the present, we must be content with much less precise ideas of hue; and begin our practice with little more than the hope of arriving at some effective skill in producing the tints we want, and securing some general conclusions about their effects in companionship with, or opposition to, each other; the principal use of their zodiacal arrangement, above given, being that each color is placed over against its proper opponent;—Jacinth being the hue which most perfectly relieves Or, and Primrose the most lovely opponent to Heath. The stamens and petals of the sweet-wil-

liam present the loveliest possible type of the opposition of a subtle and subdued Lucia to dark Clarissa. In central spring on the higher Alps, the pansy, (or, where it is wanting, the purple ophryds,) with the bell gentian, and pale yellow furred anemone, complete the entire chord from Or to Jacinth in embroideries as rich as those of an Eastern piece of precious needlework on green silk.* The chord used in the best examples of glass and illumination is Jasper, Jacinth, and Sapphire, on ground of Or: being the scarlet, purple, and blue of the Jewish Tabernacle, with its clasps and furniture of gold.

30. The best Rubrics of ecclesiastical literature are founded on the opposition of Jasper to Sapphire, which was the principal one in the minds of the illuminators of the thirteenth century. I do not know if this choice was instinctive, or scientific; many far more beautiful might have been adopted; and I continually, and extremely, regret the stern limitation of the lovely penmanship of all minor lettering, for at least a hundred years through the whole of literary Europe, to these two alternating colors. But the fact is that these do quite centrally and accurately express the main opposition of what artists call, and most people feel to be truly called, *warm* colors as opposed to cold; pure blue being the coldest, and pure scarlet the warmest, of abstract hues.

31. Into the mystery of Heat, however, as affecting color-sensation, I must not permit myself yet to enter, though I believe the student of illumination will be enabled at once, by the system given in this chapter, to bring his work under more consistent and helpful law than he has hitherto found written for his use. My students of

* Conf. Lane's Arabian Nights, vol. i., p. 480, and vol. ii., p. 395.

117118

drawing will find the subject carried on as far as they need follow, in tracing the symbolic meanings of the colors, from the 28th to the 40th paragraph of the seventh chapter of 'Deucalion;' (compare also 'Eagle's Nest,' p. 216;) and, without requiring, in practice, the adoption of any nomenclature merely fanciful, it may yet be found useful, as an aid to memory for young people, to associate in their minds the order of the zodiacal colors with that of the zodiacal signs. Taking Jacinth for Aries, Or will very fitly be the color of Libra, and blue of Aquarius; other associations, by a little graceful and careful thought, may be easily instituted between each color and its constellation; and the motion of the Source of Light through the heavens, registered to the imagination by the beautiful chord of his own divided rays.

CHAPTER VIII.

OF THE RELATION OF COLOR TO OUTLINE.

1. My dear reader,—If you have been obedient, and have hitherto done all that I have told you, I trust it has not been without much subdued remonstrance, and some serious vexation. For I should be sorry if, when you were led by the course of your study to observe closely such things as are beautiful in color, (feathers, and the like, not to say rocks and clouds,*) you had not long to paint them, and felt considerable difficulty in complying with your restriction to the use of black, or blue, or gray. You *ought* to love color, and to think nothing quite beautiful or perfect without it; and if you really do love it, for its own sake, and are not merely desirous to color because you think painting a finer thing than drawing, there is some chance you may color well. Nevertheless, you need not hope ever to produce any thing more than pleasant helps to memory, or useful and suggestive sketches in color, unless you mean to be wholly an artist. You may, in the time which other vocations leave at your disposal, produce finished, beautiful, and masterly drawings in light and shade. But to color well, requires your life. It cannot be done cheaper. The difficulty of doing right is in-

* The first four paragraphs of this chapter, this connecting parenthesis excepted, are reprinted from the 'Elements of Drawing.' Read, however, carefully, the modifying notes.

creased—not twofold nor threefold, but a thousandfold, and more—by the addition of color to your work. For the chances are more than a thousand to one against your being right both in form and color with a given touch : it is difficult enough to be right in form, if you attend to that only ; but when you have to attend, at the same moment, to a much more subtle thing than the form, the difficulty is strangely increased ;—and multiplied almost to infinity by this great fact, that, while form is absolute, so that you can say at the moment you draw any line that it is either right or wrong, color is (wholly) *relative*.* Every hue throughout your work is altered by every touch that you add in other places ; so that what was warm† a minute ago, becomes cold when you have put a hotter color in another place ; and what was in harmony when you left it, becomes discordant as you set other colors beside it : so that every touch must be laid, not with a view to its effect at the time, but its effect in futurity, the result upon

* No, not ' wholly ' by any means This is one of the over-hasty statements which render it impossible for me to republish, without more correction than they are worth, the books I wrote before the year 1860. Color is no less positive than line, considered as a representation of fact ; and you either match a given color, or do not, as you either draw a given ellipse or square, or do not. Nor, on the other hand, are lines, in their grouping, destitute of relative influence ; they exalt or depress their individual powers by association ; and the necessity for the correction of the above passage in this respect was pointed out to me by Miss Hill, many and many a year ago, when she was using the Elements in teaching design for glass. But the influence of lines on each other is restricted within narrow limits, while the sequences of color are like those of sound, and susceptible of all the complexity and passion of the most accomplished music.

† I assumed in the ' Elements of Drawing ' the reader's acquaintance with this and other ordinary terms of art. But see § 30 of the last chapter.

it of all that is afterwards to be done being previously considered. You may easily understand that, this being so, nothing but the devotion of life, and great genius besides, can make a colorist.

2. But though you cannot produce finished colored drawings of any value, you may give yourself much pleasure, and be of great use to other people, by occasionally sketching with a view to color only ; and preserving distinct statements of certain color facts—as that the harvest-moon at rising was of such and such a red, and surrounded by clouds of such and such a rosy gray ; that the mountains at evening were, in truth, so deep in purple ; and the waves by the boat's side were indeed of that incredible green. This only, observe, if you have an eye for color ; but you may presume that you have this, if you enjoy color.

3. And, though of course you should always give as much form to your subject as your attention to its color will admit of, remember that the whole value of what you are about depends, in a colored sketch, on the color merely. If the color is wrong, every thing is wrong : just as, if you are singing, and sing false notes, it does not matter how true the words are. If you sing at all, you must sing sweetly ; and if you color at all, you must color rightly. Give up all the form, rather than the slightest part of the color : just as, if you felt yourself in danger of a false note, you would give up the word and sing a meaningless sound, if you felt that so you could save the note. Never mind though your houses are all tumbling down,—though your clouds are mere blots, and your trees mere knobs, and your sun and moon like crooked sixpences,—so only that trees, clouds, houses, and sun or moon, are of the right colors.

4. Of course, the collateral discipline to which you are submitting—(if you are)—will soon enable you to hint something of form, even in the fastest sweep of the brush; but do not let the thought of form hamper you in the least, when you begin to make colored memoranda. If you want the form of the subject, draw it in black and white. If you want its color, take its color, and be sure you *have* it; and not a spurious, treacherous, half-measured piece of mutual concession, with the colors all wrong, and the forms still any thing but right. It is best to get into the habit of considering the colored work merely as supplementary to your other studies; making your careful drawings of the subject first, and then a colored memorandum separately, as shapeless as you like, but faithful in hue, and entirely minding its own business. This principle, however, bears chiefly on large and distant subjects; in foregrounds, and near studies, the color cannot be got without a good deal of definition of form. For if you do not shape the mosses on the stones accurately, you will not have the right quantity of color in each bit of moss pattern, and then none of the colors will look right; but it always simplifies the work much if you are clear as to your point of aim, and satisfied, when necessary, to fail of all but that.

5. Thus far I have repeated, with modification of two sentences only, the words of my old 'Elements of Drawing;'—words which I could not change to any good purpose, so far as they are addressed to the modern amateur, whose mind has been relaxed, as in these days of licentious pursuit of pleasurable excitement all our minds must be, more or less, to the point of not being able to endure the stress of wholesome and errorless labor,—(errorless, I mean, of

course, only as far as care can prevent fault). But the laws of Fésole address themselves to no person of such temper; they are written only for students who have the fortitude to do their best; and I am not minded any more, as will be seen in next chapter, while they have any store of round sixpences in their pockets, to allow them to draw their Sun, Earth, or Moon like crooked ones.

6. Yet the foregoing paragraphs are to be understood also in a nobler sense. They are right, and for evermore right, in their clear enunciation of the necessity of being true in color, as in music, note to note; and therefore also in their implied assertion of the existence of Color-Law, recognizable by all colorists, as harmony is by all musicians; and capable of being so unanimously ascertained by accurate obedience to it, that an ill-colored picture could be no more admitted into the gallery of any rightly constituted Academy, or Society of Painters, than a howling dog into a concert.

7. I say, observe, that Color-Law may be ascertained by accurate *obedience* to it; not by theories concerning it. No musical philosophy will ever teach a girl to sing, or a master to compose; and no color-philosophy will ever teach a man of science to enjoy a picture, or a dull painter to invent one. Nor is it prudent, in early practice, even to allow the mind to be influenced by its preferences and fancies in color, however delicate. The first thing the student has to do is to enable himself to match *any* color when he sees it; and the effort which he must make constantly, for many a day, is simply to match the color of natural objects as nearly as he can.

And since the mightiest masters in the world cannot match these *quite*, nor any *but* the mightiest match them,

even nearly; the young student must be content, for many and many a day, to endure his own deficiencies with resolute patience, and lose no time in hopeless efforts to rival what is admirable in art, or copy what is inimitable in nature.

8. And especially, he must for a long time abstain from attaching too much importance to the beautiful mystery by which the blended colors of objects seen at some distance charm the eye inexplicably. The day before yesterday, as I was resting in the garden, the declining sunshine touched just the points of the withered snapdragons on its wall. They never had been any thing very brilliant in the way of snapdragons, and were, when one looked at them close, only wasted and much pitiable ruins of snapdragons; but this Enid-like tenderness of their fading gray, mixed with what remnant of glow they could yet raise into the rosy sunbeams, made them, at a little distance, beautiful beyond all that pencil could ever follow. But you are not to concern yourself with such snapdragons yet, nor for a long while yet.

Attempt at first to color nothing but what is well within sight, and approximately copiable;—but take a *group* of objects always, not a single one; outline them with the utmost possible accuracy, with the lead; and then paint each of its own color, with such light and shade as you can see in it, and produce, in the first wash, as the light and shade is produced in Plate VI., never retouching. This law will compel you to look well what the color is, before you stain the paper with any: it will lead you, through that attention, daily into more precision of eye, and make all your experience gainful and definite.

9. Unless you are very sure that the shadow is indeed

of some different color from the light, shade simply with a deeper, and if you already know what the word means, a warmer, tone of the color you are using. Darken, for instance, or with crocus, ruby with clarissa, heath with ruby ; and, generally, any color whatever with the one next to it, between it and the jasper. And in all mixed colors make the shade of them slightly more vivid in hue than the light, unless you assuredly see it in nature to be less so. But for a long time, do not trouble yourself much with these more subtle matters ; and attend only to the three vital businesses ;—approximate matching of the main color in the light,—perfect limitation of it by the outline, and flat, flawless laying of it over all the space within.

10. For instance, I have opposite me, by chance, at this moment, a pale brown cane-bottomed chair, set against a pale greenish wall-paper. The front legs of the chair are round ; the back ones, something between round and square ; and the cross-bar of the back, flat in its own section, but bent into a curve.

To represent these roundings, squarings, and flattenings completely, with all the tints of brown and gray involved in them, would take a forenoon's work, to little profit. But to outline the entire chair with extreme precision, and then tint it with two well-chosen colors, one for the brown wood, the other for the yellow cane, completing it, part by part, with gradation, such as could be commanded in the wet color ; and then to lay the green of the wall behind, into the spaces left, fitting edge to edge without a flaw or an overlapping, would be progressive exercise of the best possible kind.

Again, on another chair beside me there is a heap of

books, as the maid has chanced to leave them, lifting them off the table when she brought my breakfast. It is not by any means a pretty or picturesque group; but there are no railroad-stall bindings in it,—there are one or two of old vellum, and some sober browns and greens, and a bit of red; and, altogether, much more variety of color than anybody but an old Venetian could paint rightly. But if you see* any day such a pleasantly inconsiderate heap of old books, then outline them with perfect precision, and then paint each of its own color at once, to the best of your power, completely finishing that particular book, as far as you mean to finish it,† before you touch the white paper with the slightest tint of the next,—you will have gone much farther than at present you can fancy any idea, towards gaining the power of painting a Lombard tower, or a Savoyard precipice, in the right way also,—that is to say, joint by joint, and tier by tier.

11. One great advantage of such practice is in the necessity of getting the color quite even, that it may fit with precision, and yet without any hard line, to the piece next laid on. If there has been the least too much in the brush, it of course clogs and curdles at the edge, whereas it ought to be at the edge just what it is at the middle, and to end there, whatever its outline may be, as—Well, as you see it *does* end, if you look, in the thing you are painting. Hardness, so called, and myriads of other

* You had better 'see' or find, than construct them;—else they will always have a constructed look, somehow.

† The drawing of the lines that show the edges of the leaves, or, in the last example, of the interlacing in the cane of the chair, is entirely a subsequent process, not here contemplated.

nameless faults, are all traceable, ultimately, to mere want of power or attention in keeping tints quiet at their boundary.

12. Quiet—and therefore keen ; for with this boundary of them, ultimately, you are to draw, and not with a black-lead outline ; so that the power of the crags on the far-away mountain crest, and the beauty of the fairest saint that stoops from heaven, will depend, for true image of them, utterly on the last line that your pencil traces with the edge of its color, true as an arrow, and light as the air. In the meantime, trust me, every thing depends on the lead outlines being clear and sufficient. After my own forty years' experience, I find nearly all difficulties resolve themselves at last into the want of more perfect outline : so that I say to myself—before any beautiful scene,—Alas, if only I had the outline of that, what a lovely thing I would make of it in an hour or two ! But then the outline would take, for the sort of things I want to draw, not an hour, but a year, or two !

13. Yet you need not fear getting yourself into a like discomfort by taking my counsel. This sorrow of mine is because I want to paint Rouen Cathedral, or St. Mark's, or a whole German town with all the tiles on the roofs, that one might know against what kind of multitude Luther threw his defiance. If you will be moderate in your desires as to subject, you need not fear the oppressiveness of the method ;—fear it, however, as you may, I tell you positively it is the only method by which you can ever force the Fates to grant you good success.

14. The opposite plate, VII., will give you an idea of the average quantity of lines which Turner used in any landscape sketch in his great middle time, whether he meant

to color it or not. He made at least a hundred sketches of this kind for one that he touched with color : nor is it ever possible to distinguish any difference in manner between outlines (on white paper) intended for color, or only for notation : in every case, the outline is as perfect as his time admits ; and in his earlier days, if his leisure does not admit of its perfection, it is not touched with color at all. In later life, when, as he afterwards said of himself, in woful repentance, "he wanted to draw *every* thing," both the lead outline and the color dash became slight enough,—but never inattentive ; nor did the lead outline ever lose its governing proportion to all subsequent work.

15. And now, of this outline, you must observe three things. First, touching its subject ; that the scene was worth drawing at all, only for its human interest ; and that this charm of inhabitation was *always* first in Turner's mind. If he had only wanted what vulgar artists think picturesque, he might have found, in such an English valley as this, any quantity of old tree-trunks, of young tree-branches, of lilied pools in the brook, and of grouped cattle in the meadows. For no such mere picture-material he cares ; his time is given to seize and show the total history and character of the spot, and all that the people of England had made of it, and become in it. There is the ruined piece of thirteenth-century abbey ; the rector's house beside it ;* the gate-posts of the squire's avenue above ; the steep fourteenth or fifteenth-century bridge over the stream ; the low-roofed, square-towered

* Compare, if by chance you come across the book, the analysis of the design of Turner's drawing of 'Heysham' in my old 'Elements of Drawing,' page 325.

village church on the hill; two or three of the village houses and outhouses traced on the left, omitting, that these may be intelligible, the "row of old trees," which, nevertheless, as a part, and a principal part, of the landscape, are noted, by inscription, below; and will be assuredly there, if ever he takes up the subject for complete painting; as also the tall group of 'ash' on the right, of which he is content at present merely to indicate the place, and the lightness.

16. Do not carry this principle of looking for signs of human life or character, any more than you carry any other principle, to the point of affectation. Whatever pleases and satisfies you for the present, may be wisely drawn; but remember always that the beauty of any natural object is relative to the creatures it has to please; and that the pleasure of these is in proportion to their reverence and their understanding. There can be no natural 'phenomena' without the beings to whom they are 'phenomenal' (or, in plainer English, things cannot be apparent without some one to whom they may appear), and the final definition of Beauty is, the power in any thing of delighting an intelligent human soul by its appearance, —power given to it by the Maker of Souls. The perfect beauty of Man is summed in the Arabian exclamation, "Praise be to Him who created thee!" and the perfect beauty of all natural things summed in the Angel's promise, "Goodwill towards men."

17. In the second place, observe, in this outline, that no part of it is darker or lighter than any other, except in the moment of ceasing or disappearing. As the edge becomes less and less visible to the eye, Turner's pencil line fades, and vanishes where also the natural outline

vanished. But he does not draw his ash trees in the foreground with a darker line than the woods in the distance.

This is a great and constant law. Whether your outline be gray or black, fine or coarse, it is to be *equal* everywhere. Always conventional, it is to be sustained throughout in the frankness of its conventionalism ; it no more exists in nature as a visible line, at the edge of a rose leaf near, than of a ridge of hills far away. Never try to express more by it than the limitation of forms ; it has nothing to do with their shadows, or their distances.

18. Lastly, observe of this Turner outline, there are some conditions of rapid grace in it, and others of constructive effect by the mere placing of broken lines in relative groups, which, in the first place, can be but poorly rendered even by the engraver's most painstaking facsimile ; and, in the second, cannot be attained in practice but after many years spent in familiar use of the pencil. I have therefore given you this plate, not so much for an immediate model, as to show you the importance of outline even to a painter whose chief virtue and skill seemed, in his finished works, to consist in losing it. How little this was so in reality, you can only know by prolonged attention, not only to his drawings, but to the natural forms they represent.

19. For there were current universally during Turner's lifetime,* and there are still current very commonly, two

* I conclude the present chapter with the statement given in the catalogue I prepared to accompany the first exhibition of his works at Marlborough House, in the year 1857, because it illustrates some points in water-color work, respecting which the student's mind may advisedly be set at rest before further procedure. I have also left the 17th paragraph without qualification, on account of its great impor-

great errors concerning him; errors which not merely *lose sight* of the facts, but which are point-blank *contradictory* of the facts. It was thought that he painted chiefly from imagination, when his peculiar character, as distinguished from all other artists, was in always drawing from memories of seen fact. And it was commonly thought that he was great only in coloring, and could not draw; whereas, his eminent distinction above other artists, so far as regards execution, was in his marvellous precision of *graphic* touch, disciplined by practice of engraving, and by life-long work with the hard lead pencil-point on white paper.

20. Now there are many truths respecting art which cannot be rightly stated without involving an appearance of contradiction; and those truths are commonly the most important. There are, indeed, very few truths in any science which can be fully stated without such an expression of their opposite sides, as looks, to a person who has not grasp of the subject enough to take in both the sides at once, like contradiction. This law holds down even to very small minutiæ in the physical sciences. For instance, a person ignorant of chemistry hearing it stated, perhaps consecutively, of hydrogen gas, that it was "in a high degree combustible," and "a non-supporter of combustion," would probably think the lecturer or writer was a fool; and when the statement thus made embraces wide fields of difficult investigation on both sides, its final terms invariably appear contradictory to a person who has but a narrow acquaintance with the matter in hand.

tance; but the student must be careful in reading it to distinguish between true outline, and a linear basis for future shadow, as in Plate VIII., which I put here for immediate reference.

Thus, perhaps, no two more apparently contradictory statements could be made in brief terms, than these,—

1. The perfections of drawing and coloring are inconsistent with one another.
2. The perfections of drawing and coloring are dependent upon one another.

And yet both these statements are true.

21. The first is true, because, in order that color may be right, some of the markings necessary to express perfect form must be omitted; and also because, in order that it may be right, the intellect of the artist must be concentrated on that first, and must in some slight degree fail of the intenseness necessary to reach relative truth of form; and *vice versâ*.

The truth of the second proposition is much more commonly disputed. Observe, it is a twofold statement. The perfections of drawing and coloring are reciprocally dependent upon each other, so that

A. No person can draw perfectly who is not a colorist.
B. No person can color perfectly who is not a draughtsman.

22. A. No person can draw perfectly who is not a colorist. For the effect of contour in all surfaces is influenced in nature by gradations of color as much as by gradations of shade; so that if you have not a true eye for color, you will judge of the shades wrongly. Thus, if you cannot see the changes of hue in red, you cannot draw a cheek or lip rightly; and if you cannot see the changes of hue in green or blue, you cannot draw a wave. All studies of form made with a despiteful or ignorant neglect of color lead to exaggerations and misstatements of the form-markings; that is to say, to bad drawing.

23. B. No person can color perfectly who is not a draughtsman. For brilliancy of color depends, first of all, on gradation ; and gradation, in its subtleties, cannot be given but by a good draughtsman. Brilliancy of color depends next on decision and rapidity in laying it on ; and no person can lay it on decisively, and yet so as to fall into, or approximately fall into, the forms required, without being a thorough draughtsman. And it is always necessary that it should fall into a predeterminate form, not merely that it may represent the intended natural objects, but that it may itself take the shape, as a patch of color, which will fit it properly to the other patches of color round about it. If it touches them more or less than is right, its own color and theirs will both be spoiled.

Hence it follows that all very great colorists must be also very great draughtsmen. The possession of the Pisani Veronese will happily enable the English public and the English artist to convince themselves how sincerity and simplicity in statements of fact, power of draughtsmanship, and joy in color, were associated in a perfect balance in the great workmen of Venice ; while the series of Turner's studies which are now accessible in the same gallery will show them with what intensity of labor his power of draughtsmanship had to be maintained by the greatest colorist of the modern centuries.

24. One point only remains to be generally noticed,— that the command of means which Turner acquired by this perpetual practice, and the decision of purpose resulting from his vast power at once of memory and of design, enabled him nearly always to work straight forward upon his drawings, neither altering them, nor using any of the mechanical expedients for softening tints so frequently

employed by inferior water-color painters. Many traditions indeed are afloat in the world of art respecting extraordinary processes through which he carried his work in its earlier stages ; and I think it probable that, in some of his elaborately completed drawings, textures were prepared, by various mechanical means, over the general surface of the paper, before the drawing of detail was begun. Also, in the large drawings of early date, the usual expedients of sponging and taking out color by friction have often been employed by him ; but it appears only experimentally, and that the final rejection of all such expedients was the result of their trial ; for in all the rest of the national collection the evidence is as clear as it is copious that he went straight to his mark ; in early days finishing piece by piece on the white paper ; and, as he advanced in skill, laying the main masses in broad tints, and working the details over these : never effacing or sponging, but taking every advantage of the wetness of the color, when first laid, to bring out soft lights with the point of the brush, or scratch out bright ones with the end of the stick, so driving the wet color in a dark line to the edge of the light,—a very favorite mode of execution with him, for three reasons : that it at once gave a dark edge, and therefore full relief, to the piece of light ; secondly, that it admitted of firm and angular drawing of forms ; and, lastly, that as little color was removed from the whole mass (the quantity taken from the light being only driven into the dark), the quantity of hue in the mass itself, as broadly laid, in its first membership with other masses, was not much affected by the detailing process.

25. When these primary modifications of the wet color had been obtained, the drawing was proceeded with, ex-

actly in the manner of William Hunt, of the old Water-color Society, (if worked in transparent hues,) or of John Lewis, if in opaque,—that is to say, with clear, firm, and unalterable touches one over another, or one into the insterstices of another ; NEVER disturbing them by any general wash ; using friction only where roughness of surface was locally required to produce effects of granulated stone, mossy ground, and such like ; and rarely even taking out minute lights, but leaving them from the first, and working round and up to them ;—very frequently drawing thin, dark outlines merely by putting a little more water into the wet touches, so as to drive the color to the edge as it dried ; the only difference between his manipulation and William Hunt's being in his inconceivably varied and dexterous use of expedients of this kind,—such, for instance, as drawing the broken edge of a cloud merely by a modulated dash of the brush, defining the perfect forms with a quiver of his hand ; rounding them by laying a little more color into one part of the dash before it dried, and laying the warm touches of the light *after* it had dried, outside of the edges. In many cases, the instantaneous manipulation is quite inexplicable.

26. It is quite possible, however, that, even in the most advanced stages of some of the finished drawings, they may have been damped, or even fairly put under water, and wetted through ; nay, they may even have been exposed to strong currents of water, so as to remove superfluous color without defiling the tints anywhere ; only most assuredly they never received any friction such as would confuse or destroy the edges and purity of separate tints. And all I can *assert* is, that in the national collection there is no evidence of any such processes. In the

plurality of the drawings the evidence is, on the contrary, absolute, that nothing of the kind has taken place; the greater number being executed on leaves of books, neither stretched nor moistened in any way whatever; or else on little bits of gray paper, often folded in four, and as often with the colored drawings made on *both* sides of a leaf. The coarser vignettes are painted on sheets of thin drawing-paper; the finer ones on smooth cardboard, of course without washing or disturbing the edges, of which the perfect purity is essential to the effect of the vignette.

27. I insist on this point at greater length, because, so far as the direct copying of Turner's drawings can be useful to the student (working from nature with Turner's faithfulness being the *essential* part of his business), it will be so chiefly as compelling him to a decisive and straightforward execution. I observed that in the former exhibition the students generally selected those drawings for study which could be approximately imitated by the erroneous processes of modern water color; and which were therefore exactly those that showed them least of Turner's mind, and taught them least of his methods.

The best practice, and the most rapid appreciation of Turner, will be obtained by accurately copying his sketches in body color on gray paper; and when once the method is understood, and the resolution made to hold by it, the student will soon find that the advantage gained is in more directions than one. For the sum of work which he can do will be as much greater in proportion to his decision, as it will be in each case better, and, after the first efforts, more easily done. He may have been appalled by the quantity which he sees that Turner accomplished; but he will be encouraged when he finds how much any one

may accomplish who does not hesitate, nor repent. An artist's nerve and power of mind are lost chiefly in deciding what to do, and in effacing what he has done : it is anxiety, not labor, that fatigues him ; and vacillation, not difficulty, that hinders him. And if the student feels doubt respecting his own decision of mind, and questions the possibility of gaining the habit of it, let him be assured that in art, as in life, it depends mainly on simplicity of purpose. Turner's decision came chiefly of his truthfulness ; it was because he meant always to be true, that he was able always to be bold. And you will find that you may gain his courage, if you will maintain his fidelity. If you want only to make your drawing fine, or attractive, you may hesitate indeed, long and often, to consider whether your faults will be forgiven, or your fineries perceived. But if you want to put fair fact into it, you will find the fact shape it fairly for you ; and that in pictures, no less than in human life, they who have once made up their minds to do right, will have little place for hesitation, and little cause for repentance.

CHAPTER IX.

OF MAP DRAWING.

1. Of all the principles of Art which it has been my endeavor throughout life to inculcate, none are so important, and few so certain, as that which modern artists have chiefly denied,—that Art is only in her right place and office when she is subordinate to use; that her duty is always to teach, though to teach pleasantly; and that she is shamed, not exalted, when she has only graces to display, instead of truths to declare.

2. I do not know if the Art of Poetry has ever been really advanced by the exercise of youth in writing nonsense verses; but I know that the Art of Painting will never be so, by the practice of drawing nonsense lines; and that not only it is easy to make every moment of time spent in the elementary exercises of Art serviceable in other directions; but also it will be found that the exercises which are directed most clearly to the acquisition of general knowledge, will be swiftest in their discipline of manual skill, and most decisive in their effect on the formation of taste.

3. It will be seen, in the sequel of the Laws of Fésole, that every exercise in the book has the ulterior object of fixing in the student's mind some piece of accurate knowledge, either in geology, botany, or the natural history of animals. The laws which regulate the delineation of

these, are still more stern in their application to the higher branches of the arts concerned with the history of the life, and symbolism of the thoughts, of Man ; but the general student may more easily learn, and at first more profitably obey them, in their gentler authority over inferior subjects.

4. The beginning of all useful applications of the graphic art is of course in the determination of clear and beautiful forms for letters ; but this beginning has been invested by the illuminator with so many attractions, and permits so dangerous a liberty to the fancy, that I pass by it, at first, to the graver and stricter work of geography. For our most serviceable practice of which, some modifications appear to me desirable in existing modes of globe measurement : these I must explain in the outset, and request the student to familiarize himself with them completely before going farther.

5. On our ordinary globes the 360 degrees of the equator are divided into twenty-four equal spaces, representing the distance through which any point of the equator passes in an hour of the day : each space therefore consisting of fifteen degrees.

This division will be retained in St. George's schools ; but it appears to me desirable to give the student a more clear and consistent notion of the length of a degree than he is likely to obtain under our present system of instruction. I find, for instance, in the Atlas published under the superintendence of the Society for the Diffusion of Useful Knowledge,* that, in England and Ireland, a de-

* The larger Atlas is without date : the selection of maps issued for the use of Harrow School in 1856 is not less liberal in its views respecting the length of a degree.

gree contains 69.14 English miles ; in Russia, 69.15 ; in Scotland, 69.1 ; in Italy, 69 ; in Turkey, 68.95 ; and in India 68.8. In Black's more elaborate Atlas, the degree at the equator is given as 69.6, whether of longitude or latitude, with a delicate scale of diminution in the degrees of latitude to the pole, of which the first terms would quite fatally confuse themselves in a young student's mind with the wavering estimates given, as above quoted, in more elementary publications.

6. Under these circumstances, since in the form of the artificial globe we ignore the polar flatness of it, I shall also ignore it in practical measurement ; and estimate the degrees of longitude at the equator, and of latitude everywhere, as always divided into Italian miles, one to the minute, sixty to the degree. The entire circumference of the earth at the equator will thus be estimated at 21,600 miles ; any place on the equator having diurnal motion at the rate of 900 miles an hour. The reduction, afterwards, of any required distance into English miles, or French kilometres, will be easy arithmetic.

7. The twenty-four meridians drawn on our common globes will be retained on St. George's ; but numbered consecutively round the globe, 1 to 24, from west to east. The first meridian will be that through Fésole, and called Galileo's line ; the second, that approximately through Troy,* called the Ida line. The sixth, through the eastern edge of India, will be called ' the Orient line ; ' the eighteenth, through the Isthmus of Vera Cruz, ' the Occident line ; ' and the twenty-fourth, passing nearly with

* Accurately, it passes through Tenedos, thus dividing the Ida of Zeus from the Ida of Poseidon in Samothrace. See ' Eothen,' Chapter IV.; and Dr. Schliemann's Troy, Plate IV.

precision, through our English Devonport, and over Dartmoor, 'the Devon line.' Its opposite meridian, the twelfth, through mid-Pacific, will be called the Captains' line.

8. The meridians on ordinary globes are divided into lengths of ten degrees, by eight circles drawn between the equator and each of the poles. But I think this numeration confusing to the student, by its inconsistency with the divisions of the equator, and its multiplication of lines parallel to the Arctic and Tropic circles. On our St. George's globes, therefore, the divisions of latitude will be, as those of longitude, each fifteen degrees, indicated by five circles drawn between each pole and the equator.

Calling the equator by its own name, the other circles will be numbered consecutively north and south; and called 1st, 2nd, etc., to the 5th, which will be that nearest the Pole. The first north circle will be found to pass through the Cape-de-Verde island of St. Jago; the second north circle will be the line of latitude on our present globes passing approximately through Cairo; the third will as nearly run through Venice; the fourth, almost with precision, through Christiania; and the fifth through Cape Fern, in Nova Zembla. I wish my students to call these circles, severally, the St. James's circle, the Arabian circle, the Venetian circle, the Christian circle, and the Fern circle. On the southern hemisphere, I shall call the first circle St. John's; thus enclosing the most glowing space of the tropics between the lines named from the two Sons of Thunder; the Natal circle will divide intelligibly the eastern coast of Africa, and preserve the title of an entirely true and noble,—therefore necessarily much persecuted,—Christian Bishop; the St.

George's circle, opposite the Venetian, will mark the mid-quadrant, reminding the student, also, that in far South America there is a Gulf of St. George ; the Thulë circle will pass close south of the Southern Thulë ; and the Blanche circle (*ligne* Blanche, for French children),

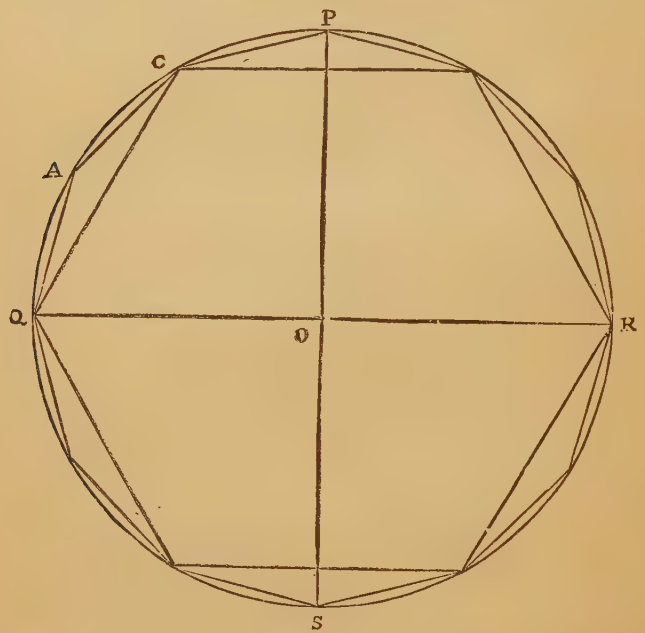

Fig. 18.

include, with Mounts Erebus and Terror, the supposed glacial space of the great Antarctic continent.

9. By this division of the meridians, the student, besides obtaining geographical tenure in symmetrical clearness, will be familiarized with the primary division of the circle by its radius into arcs of 60°, and with the subdivis-

ions of such arcs. And he will observe that if he draws his circle representing the world with a radius of two inches, (in Figure 18, that it may come within my type, it is only an inch and a half,) lettering the Equator Q R, the North Pole P, the South Sole S, and the centre of the circle, representing that of the Earth, O; then completing the internal hexagon and dodecagon, and lettering the points through which the Arabian and Christian circles pass, respectively A and C, since the chord Q C equals the radius Q O, it will also measure two inches, and the arc upon it, Q A C, somewhat more than two inches, so that the entire circle will be rather more than a foot round.

10. Now I want some enterprising map-seller * to prepare some school-globes, accurately of such dimension that the twenty-four-sided figure enclosed in their circle may be exactly half an inch in the side; and therefore the twenty-four meridians and eleven circles of latitude drawn on it with accurately horizontal intervals of half an inch between each of the meridians at the equator, and between the circles everywhere.

And, on this globe, I want the map of the world engraved in firm and simple outline, with the principal mountain chains; but no rivers,† and no names of any country; and this nameless chart of the world is to be colored, within the Arctic circles, the sea pale sapphire, and the land white; in the temperate zones, the sea full

* I cannot be answerable, at present, for what such enterprise may produce. I will see to it when I have finished my book, if I am spared to do so.

† My reason for this refusal is that I want children first to be made to *guess* the courses and sizes of rivers, from the formation of the land; and also, that nothing may disturb the eyes or thoughts in fastening on that formation.

lucia, and the land pale emerald ; and between the tropics, the sea full violet, and the land pale clarissa.

These globes I should like to see executed with extreme fineness and beauty of line and color ; and each enclosed in a perfectly strong cubic case, with silk lining. And I hope that the time may come when this little globe

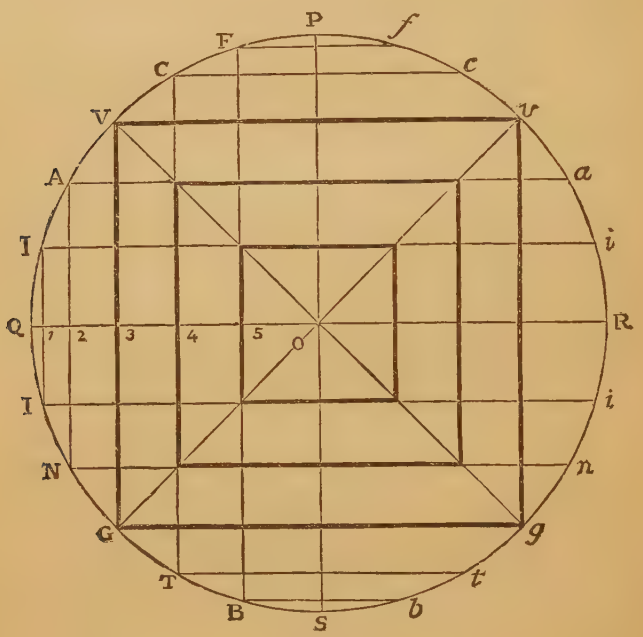

Fig. 19.

may be just as necessary a gift from the parents to the children, in any gentleman's family, as their shoes or bonnets.

11. In the meantime, the letters by which the circles are distinguished, added, in Figure 19, to the complete

series of horizontal lines representing them, will enable the student rapidly to read and learn their names from the equator up and down. "St. James's, Arabian, Venetian, Christian, Fern; St. John's, Natal, St. George's, Thulë, Blanche;"—these names being recognized always as belonging no less to the points in the arcs of the quadrant in any drawing, than to the globe circles; and thus rendering the specification of forms more easy. In such specification, however, the quadrant must always be conceived as a part of the complete circle; the lines O Q and O R are always to be called 'basic:' the letters Q P, R P, Q S, and R S, are always to be retained, each for their own arc of the quadrant; and the points of division in the arcs R P and R S distinguished from those in the arcs Q P and Q S by small, instead of capital, letters. Thus a triangle to be drawn with its base on St. George's circle, and its apex in the North Pole, will be asked for simply as the triangle G P g; the hexagon with the long and short sides, C P, P R, may be placed at any of the points by describing it as the hexagon Q A c,—J V v, or the like; and ultimately the vertical triangles on the great divisional lines for bases will need no other definition than the letters B P, T P, C P, etc.

The lines F f V v, etc., taken as the diameters of their respective circles, may be conveniently called, in any geometrical figure in which they occur, the Fern line, the Venetian line, etc.; and they are magnitudes which will be of great constructive importance to us, for it may be easily seen, by thickening the lines of the included squares, that the square on the Venetian line, the largest that can be included in the circle, is half the square on the equator; the square on the Christian line, the square of

the radius, is again half of that on the Venetian ; and the square on the Fern line, a fifth diminishing term between the square of the equator and zero.

12. Next, I wish my pupils each to draw for themselves the miniature hemisphere, Plate IX., Figure 1, with a radius of an inch and nine-tenths, which will give them approximately the twenty-four divisions of half an inch each. Then, verticals are to be let fall from the points J, A, etc., numbered 1, 2, 3, 4, and 5, as in Figure 19, and then the meridians in red, with the pencil, by hand, through the points 1, 2, etc., of the figure ; observing that each meridian must be an elliptical, not a circular, arc. And now we must return, for a moment, to the fifteenth paragraph of the fourth chapter, where we had to quit our elliptic practice for other compass work.

13. The ellipse, as the perspective of the circle, is so important a natural line that it is needful to be perfectly familiar with the look of it, and perfectly at ease in the tracing of it, before the student can attempt with success the slightest architectural or landscape outline. Usually, the drawing of the ellipse is left to gather itself gradually out of perspective studies ; but thus under a disadvantage, seldom conquered, that the curve at the narrow extremity, which is the only important part of it, is always confused with the right line enclosing the cylinder or circle to be drawn ; and never therefore swept with delicacy or facility. I wish the student, therefore, to conquer all hesitation in elliptic drawing at once, by humbly constructing ellipses, in sufficiently various number, large and small, with two pins' heads and a thread ; and copying these with the lead, first, very carefully, then fastening the lead line with pencil and color.

This practice should be especially directed to the extremities of the narrow and long elliptic curves, as the beauty of some of the finest architecture depends on the perspective of this form in tiers of arches : while those of the shores of lakes, and bending of streams, though often passing into other and more subtle curves, will never be possible at all until the student is at ease in this first and elementary one.

14. Returning to our globe work, on the assumption that the pupil will prepare for it by this more irksome practice, it is to be noted that, for geographical purposes, we must so far conventionalize our perspective as to surrender the modifications produced by looking at the globe from near points of sight ; and assume that the perspectives of the meridians are orthographic, as they would be if the globe were seen from an infinite distance ; and become, practically, when it is removed to a moderate one. The real perspectives of the meridians, drawn on an orange six feet off, would be quite too subtle for any ordinary draughtsmanship ; and there would be no end to the intricacy of our map drawing if we were to attempt them, even on a larger scale. I assume, therefore, for our map work, that the globe may be represented, when the equator is level, with its eleven circles of latitude as horizontal lines ; and the eleven visible meridians, as portions of five vertical ellipses, with a central vertical line between the poles.

15. When the student has completely mastered the drawing, and, if it may be so called, the literature, of this elementary construction, he must advance another, and a great step, by drawing the globe, thus divided, with its poles at any angle, and with any degree of longitude brought above the point o.

The placing the poles at an angle will at once throw all the circles of latitude into visible perspective, like the meridians, and enable us, when it may be desirable, to draw both these and the meridians as on a transparent globe, the arcs of them being traceable in completeness from one side of the equator to the other.

16. The second figure in Plate IX. represents the globe-lines placed so as to make Jerusalem the central point of its visible hemisphere.* A map thus drawn, whether it include the entire hemisphere or not, will in future be called 'Polar' to the place brought above the point o; and the maps which I wish my students to draw of separate countries will always be constructed so as to be polar to some approximately central point of chief importance in those countries; generally, if possible, to their highest or historically most important mountain;—otherwise, to their capital, or their oldest city, or the like. Thus the map of the British Islands will be polar to Scawfell Pikes, the highest rock in England: Switzerland will be polar to Monte Rosa, Italy to Rome, and Greece to Argos.

17. This transposition of the poles and meridians must be prepared for the young pupil, and for all unacquainted with the elements of mathematics, by the master: but the class of students for whom this book is chiefly written will be able, I think without difficulty, to understand and apply for themselves the following principles of construction.

If P and S, Figure 20, be the poles of the globe in its normal position, the line of sight being in the direction of

* The meridians in this figure are given from that of Fésole, roughly taking the long. of Jerusalem 35 E., from Greenwich; and lat. 32 N.

the dotted lines, tangential to the circle at P and S; and if we then, while the line of sight remains unchanged, move the pole P to any point $\underline{P}$, and therefore, (the centre of the globe remaining fixed at O,) the pole S to the opposite extremity of the diameter, $\underline{S}$; and if A B be the diameter of any circle of latitude on the globe thus moved, such diameter being drawn between the highest and lowest points of that circle of latitude in its new position, it is evident that on the hemispherical surface of the globe

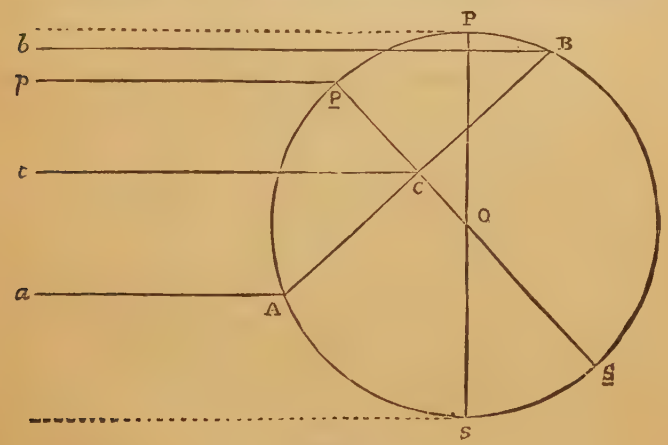

FIG. 20.

commanded by the eye, the declined pole $\underline{P}$ will be seen at the level of the line p $\underline{P}$; the levels b B, a A will be the upper and lower limits of the perspective arc of the given circle of latitude; the centre of that curve will be at the level c C; and its lateral diameter, however we change the inclination of its vertical one, will be constant.*

* Always remembering that the point of sight is at an infinite distance, else the magnitude of this diameter would be affected by the length of the interval C O.

18. On these data, the following construction of a map of the hemisphere to be made polar to a given place, will be, I think, intelligible,—or, at the very least, practicable ; which is all that at present we require of it.

Let P and S, Figure 21, be the original poles ; let the arc P Q S be the meridian of the place to which the map is to be made polar ; and let X be the place itself. From X draw the diameter X Y, which represents a circle to be called the 'equatorial line' of the given place ; and

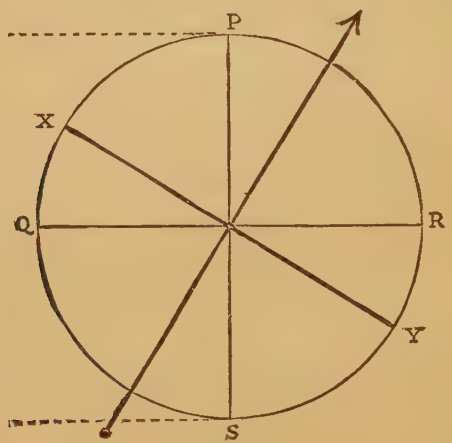

FIG. 21.

which is of course inclined to the real equator at an angel measured by the latitude of the place.

Through the point O, (which I need not in future letter, it being in our figures always the mid-point between Q and R, and, theoretically, the centre of the earth,) draw the line terminated by the ball and arrow-point, perpendicular to X Y. This is to be called the 'stellar line' of the given place X. In the map made polar to X, this

line, if represented, will coincide with the meridian of x, but must not be confused with that meridian in the student's mind.

19. Place now the figure so as to bring the stellar line vertical, indicating it well by its arrow-head and ball, which on locally polar maps will point north and south for the given place, Figure 22.

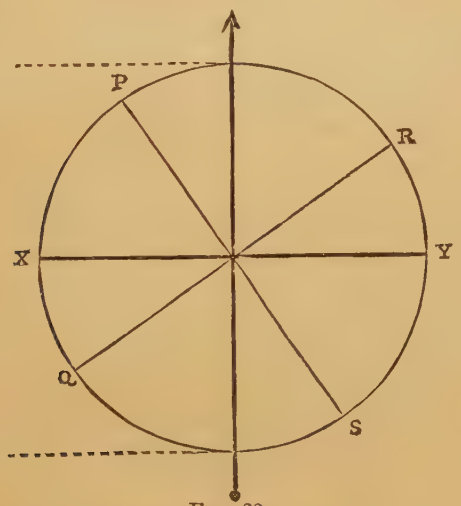

FIG. 22.

The equatorial line of x, (x y,) now becomes horizontal. Q R is the real equator, P and S the real poles, and the given place to which the map is to be made polar is at x. The line of sight remains in the direction of the dotted lines.

20. As the student reads, let him construct and draw the figures himself carefully. There is not the smallest hurry about the business, (and there must be none in *any*

business he means to be well done); all that we want is clear understanding, and fine drawing. And I multiply my figures, not merely to make myself understood, but as exercises in drawing to be successively copied. And the firm printing of the letters * is a part of this practice, taking the place of the more irksome exercise recommended in my first 'Elements of Drawing,' p. 25. Be careful, also, that they shall be not only clear and neat, but perfectly upright. You will draw palaces and towers in truer stability after drawing letters uprightly; and the position of the letter,—as, for instance, in the two last figures,—is often important in the construction of the diagram.

21. Having fixed the relations of these main lines well in his mind, the student is farther to learn these two definitions.

I. The 'Equatorial line' of any place is the complete circle of the circumference of the world passing through that place, in a plane inclined to the plane of the equator at an angle measured by the degrees of the latitude of the place.

II. The 'Stellar line' of any place is a line drawn through the centre of the Earth perpendicular to the equatorial line of that place. It is therefore, to any such equatorial line (geometrically) what the axis of the Earth is to the equator; and though it does not point to the Polestar, is always in the vertical plane passing through the Polestar and place for which it is drawn.†

* By a mistake of the engraver, the small letters, though all printed by myself in Roman form, have been changed, throughout the figures in this chapter, into italics. But in copying them, let them all be carefully printed in Roman type.

† The Polestar is assumed, throughout all our work, to indicate the true North.

22. It follows from these definitions that if we were able to look down on any place from a point vertically and exactly above it, and its equatorial and stellar lines were then visible to us, drawn, the one round the Earth, and the other through it, they would both appear as right lines, forming a cross, the equatorial line running, at the point of intersection, east and west; and the stellar, north and south.

23. Now all the maps which I hope to prepare for St. George's schools will be constructed, not by circles of latitude and meridians, but as squares of ten, twenty, or thirty degrees in the side, quartered into four minor squares of five, ten, or fifteen degrees in the side, by the cross formed by the equatorial and stellar line of the place to which the map is said to be 'polar;'—which place will therefore be at the centre of the square. And since the arc of a degree on the equatorial line is as long as the arc of a degree on the equator, and since the stellar line of a place on a polar map coincides with the meridian of that place, the measurements of distance along each of the four arms of the cross will be similar, and the enlargements of terrestrial distance expressed by them, in equal proportions.

24. I am obliged to introduce the terms "at the point of intersection," in § 22, because, beyond the exact point of intersection, the equatorial line does not run east and west, in the ordinary geographical sense. Note therefore the following conditions separating this from the usually drawn terrestrial lines.

If, from the eastern and western gates of a city, two travellers set forth to walk, one due east, and the other due west, they would meet face to face after they had

walked each the semicircle of the earth-line in their city's latitude.

But if from the eastern and western gates they set forth to walk along their city's equatorial line, they would only meet face to face after they had each walked the full semicircle of the Earth's circumference.

And if, from the eastern and western gates of their city, they were *able* to set forth, to walk along the lines used as lines of measurement on its polar map, they would meet no more forever.

For these lines, though coinciding, the one with its meridian, and the other with its equatorial line, are conceived always as lines drawn in the air, so as to touch the Earth only at the place itself, as the threads of a common squaring frame would touch the surface of a globe ; that which coincides with the Stellar line being produced infinitely in the vertical plane of the Polestar, and that which coincides with the equatorial line produced infinitely at right angles to it in the direction of the minor axis of the Earth's orbit.

25. In which orbit, calling the point of winter solstice, being that nearest the Polestar, the North point of the orbit, and that of the summer solstice South, the point of vernal equinox will be West, the point of autumnal equinox East ; and the polar map of any place will be in general constructed and shaded with the Earth in vernal equinox, and the place at the time of sunrise to it on Easter Day, supposing the sun ten degrees above the horizon, and expressing therefore the heights of the mountain chains accurately by the length of their shadows.

26. Therefore, in now proceeding to draw our polar map for the given place x, Figure 22, we have to bring

the two poles, and the place itself, to the meridian which coincides, in our circular construction, with the stellar line. Accordingly, having got our construction as in Figure 22, we let fall perpendiculars on the stellar line from all the four points P, S, Q, and R, Figure 23, giving us the four points on the stellar line p, s, q, and r.

Then, in our polar map, p and s are the new poles corresponding to P and S; q and r the new points of the

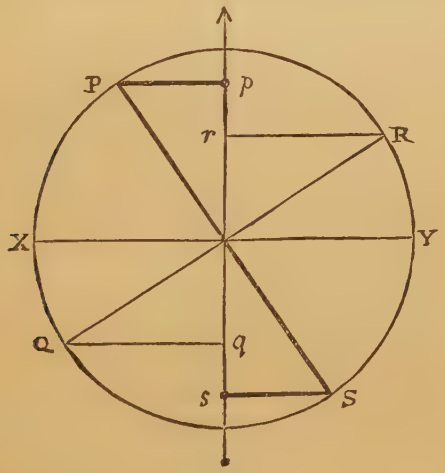

FIG. 23.

Equator corresponding to Q and R; and the place to which the map is polar, X, will now be in the centre of the map at the point usually lettered O.

27. Now this construction is entirely general, and the two zigzags, p P S s and r R Q q, must always be drawn in the same way for the poles and any given circle of latitude, as well as for the Equator;—only if the more lightly-drawn zigzag be for a north or south circle of lati-

tude, it will not be symmetrical on both sides of the line X Y. Therefore, removing the (for the moment unnecessary) line X Y from the construction, and drawing, instead of the Equator Q R, any circle of latitude L M,—l and m are the corresponding points of that circle in our polar map, and we get the entirely general construction, Figure 24, in which the place to which the map is polar, being now at the centre of the circle, is lettered x, because it is

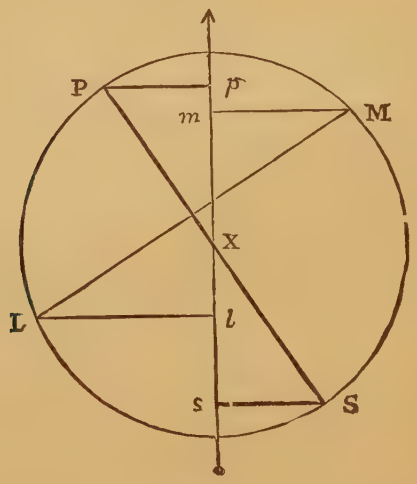

FIG. 24.

not now the centre of the earth between Q and R, but the point x, on the surface of the earth, brought round to coincide with it.

28. And now I should like the student to fix the letters attached to these constructions in his mind, as belonging, not only to their respective circles, but always to the same points in these circles. Thus the letter x will hencefor-

ward, after we have once finished the explanatory construction in the present chapter, always signify the point to which the map is polar, and Y its exactly antipodal point on the earth's surface, half round the equatorial line. If we have to speak in more detail of the equatorial line as a complete circle, it will be lettered X, E, Y, W, the letters E and W being at its extreme eastern and western points, in relation to X. And since at these points it intersects the Equator, the Equator will be also lettered Q, E, R, W, the points E and W being identical in both circles, and the point Q always in the meridian of X. Any circle of latitude other than the stated eleven will be lettered at its quarters, L, L 1, L 2, L 3, L 4, the point L being that on the meridian of X; and any full meridian circle other than one of the stated twelve will be lettered M N, the point M being that on the Equator nearest X, and N its opposite.

29. And now note carefully that in drawing the globe, or any large part of it, the meridian circles and latitude circles are always to be drawn, with the lead, full round, as if the globe were transparent. It is only thus that the truth of their delicate contact with the limiting circle can be reached. Then the visible part of the curve is to be traced with pencil and color, and that on the opposite side of the globe, and therefore invisible, to be either effaced, or indicated by a dotted line.

Thus, in Figure 25, I complete the construction from Figure 23 by first producing the lines R r, Q q, to meet the circle on both sides, so as to give me a complete feeling of the symmetry of the entire space within which my elliptic curve must be drawn; and then draw it round in complete sweep, as steadily as I can, correcting it into a

true ellipse by as much measurement as may be needful, and with the best fastidiousness of my sight. Once the perfect ellipse drawn, the question, which half of it is visible, depends on whether we intend the North or South pole to be visible. If the North, the lower half of the ellipse is the perspective of the visible half of the Equator; and if the South, vice versâ, the upper half of the ellipse.

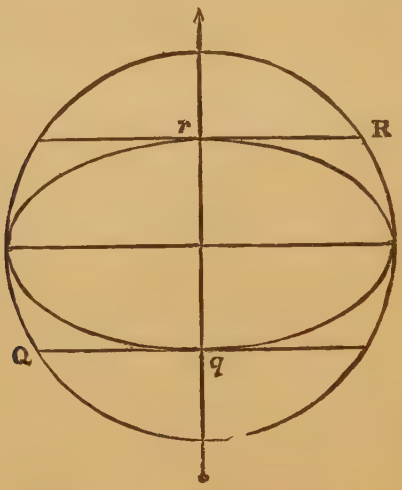

FIG. 25.

30. But the drawing becomes more difficult and subtle when we deal with the perspective of a line of latitude, as L M (Figure 24). For on completing this construction in the same manner as Figure 23 is completed in Figure 25, we shall find the ellipse does not now touch the circle with its extremities, but with some part of its sides. In Figure 26, I remove the constructing lines from Figure 24, and give only the necessary limiting ones, M m and L

l, produced : the ellipse being now drawn symmetrically between these, so as to touch the circle, it will be seen that its major axis falls beneath the point of contact, and would have to be carried beyond the ellipse if it were to meet the circle. On the small scale of these figures, and in drawing large circles of latitude, the interval seems of little importance ; yet on the beautiful drawing of it de-

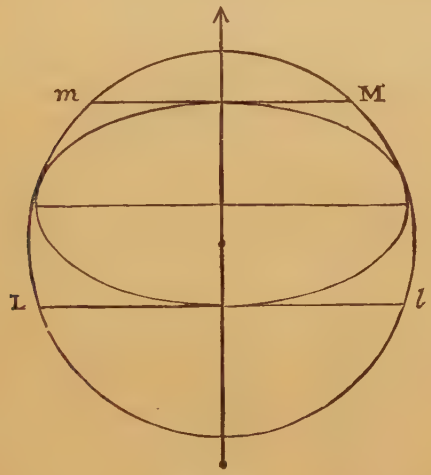

Fig. 26.

pends the right expression of all rounded things whose surface is traversed by lines—from St. Peter's dome to an acorn cup. In Figure 27 I give the segment of circle from P to Y as large as my page allows, with the semi-ellipse of the semicircle of latitude C M. The point of contact with the circle is at Z ; the axis major, drawn through C, terminates at W, making U W equal to C M ; and the pretty meeting of the curves W Z and Y Z like the

top of the rudder of a Venetian canal boat (the water being at the level X Y), becomes distinctly visible.

The semi-major axis U W is exactly equal to C M, as in Figure 25 the entire major axis is equal to L M in Figure 24.

31. Lastly, if C M cross the stellar line, as in all figures hitherto given, the ellipse always touches the circle, and

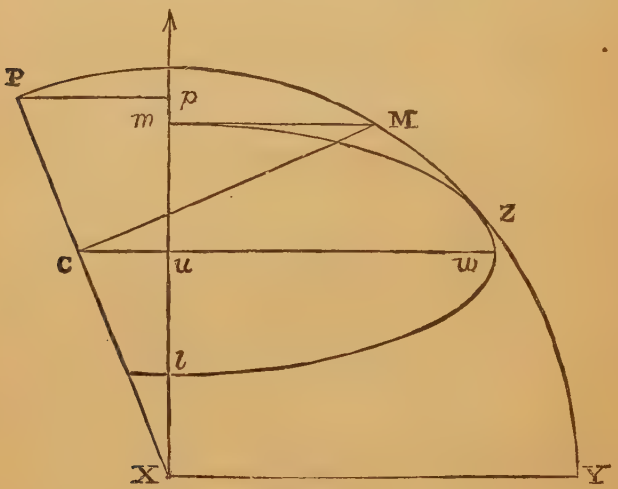

FIG. 27.

the portion of it beyond Z is invisible, on the other side of the globe, when we reduce the perspective figure to a drawing. But, as we draw the circles of latitude smaller, the interval between Z and W increases, and that between Z and M diminishes, until Z and M coincide on the stellar line, and the ellipse touches the circle with the extremity of its minor axis. As M draws still farther back towards P, the ellipse detaches itself from the circle, and becomes

entirely visible; and as we incline the pole more and more towards us, the ellipses rise gradually into sight, become rounder and rounder in their curves, and at last pass into five concentric circles encompassed by the Equator as we look vertically down on the pole. The construction of the small circle of latitude L M, when the pole is depressed to P, is given in Figure 28.

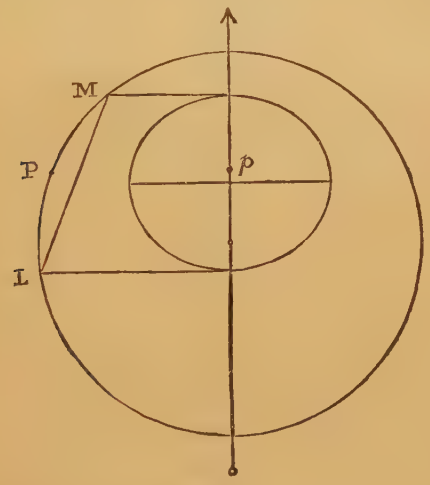

FIG. 28.

32. All this sounds at first extremely dreadful: but, supposing the system of the Laws of Fésole generally approved and adopted, every parish school may soon be furnished with accurate and beautiful drawings of the divided sphere in various positions; and the scholars led on gradually in the practice of copying them, having always, for comparison, the solid and engraved artificial globe in their hands. Once intelligently masters of this Earth-

perspective, there remain no more difficulties for them, but those of delicate execution, in the drawing of plates, or cups, or baskets, or crowns,* or any other more or less circularly divided objects; and gradually they will perceive concurrences and cadences of mightier lines in sea-waves, and mountain promontories, and arcs of breeze-driven cloud.

33. One bit of hard work more, and we have done with

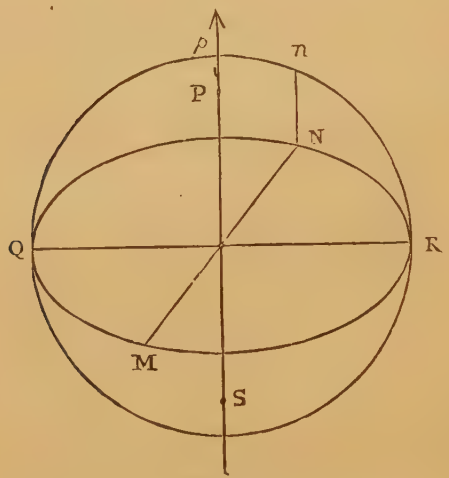

Fig. 29.

geometry for the present. We have yet to learn how to draw any meridian in true perspective, the poles being given in a vertical line. Let P and S, Figure 29, be the

* There are, of course, other perspective laws, dependent on the approach of the point of sight, introduced in the drawing of ordinary objects; but none of these laws are ever mathematically carried out by artists, nor can they be: every thing depends on the truth of their eyes and ready obedience of their fingers. All the mathematicians in

poles, P being the visible one. Then Q M R N is the Equator in its perspective relation to them ; p, the pole of the stellar line, which line is here coincident with the meridian of the place to which the map is polar. It is required to draw another meridian at a given number of degrees distant from the meridian of the place.

34. On the arc p Q, if the required meridian is to the east of the place, or on the arc p R, if the required meri-

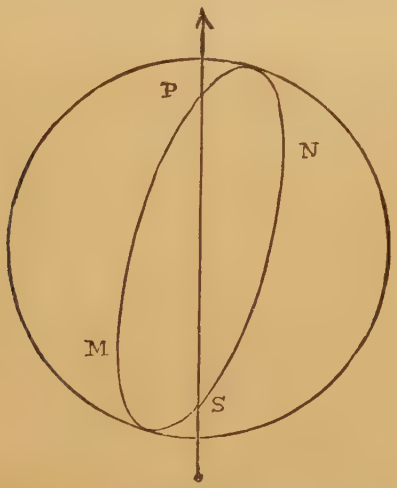

Fig. 30.

dian is to the west of it, measure an arc of the given number of degrees, p n. Let fall the vertical n N on the Equator, draw the diagonal M N through o ; and the required meridian will be the visible arc of the ellipse drawn,

France and England, with any quantity of time and every instrument in their possession, could not draw a tress of wreathed hair in perspective : but Veronese will do it, to practical sufficiency, with half a dozen consecutive touches of his pencil.

so as to touch the circle, through the four points P N S M. These four points, however placed, will always be symmetrical, the triangles O P N and O M S, if completed, being always equal and similar, and the points N and M equidistant from P and S. In Figure 30, I draw the curve, showing only these points and the stellar line; and you may, by a little effort, imagine the figure to represent two cups, or two kettle-drums, brim to brim, or rim to rim. If you suppose them so placed that you can see the inside of the cup on the left, the north pole is visible, and the left-hand half of the ellipse. If you suppose the inside of the cup on the right visible, the north pole is visible, and the right-hand half of the ellipse.

35. And now, if you have really read and worked thus far, with clear understanding, I very gladly congratulate you on having mastered quite the most important elements of perspective in curved surfaces; a mastership which you will find extremely pleasurable in its consequences, whatever the difficulty of its attainment. And in the meantime you will without further trouble understand the construction of the second figure in Plate IX., which gives the perspective of the globe on the line of sight polar to Jerusalem; assuming the longitude of Jerusalem 35° east, from the meridian of Greenwich; but engraving the St. George's order of meridians, with the Devon, Captains', Orient, and Occident in darker line. The student may, with advantage, enlarge this example so as to allow an inch to the widest interval of its meridians, and then try for himself to draw the map of the hemisphere accurately on this projection. If he succeed, he will have a true perspective view of the globe, from the given point of sight, a very different thing from a map of

it given on any ordinary projection : for, in the common geographical methods, the countries and seas are distorted into shapes, not only actually false, but which under no possible conditions they could ever assume to the eye ; while on this rightly drawn projection, they appear as they do on the artificial globe itself, and cannot therefore involve the student in any kind of misconception. Maps, properly so called, must include much less than the surface of the hemisphere ; and the mode in which they are to be drawn on this projection will be given in the eleventh chapter.

36. It remains only to be observed that although in English schools the Devon and Captains' line (meaning, the line of the great Captains) are to be taken for the first divisions in quartering the globe, and the Orient and Occident lines, for *us* determined by them, the degrees of longitude are to be counted from Galileo's line, the meridian of Fésole. For if these laws of drawing are ever accepted, as I trust, in other schools than our own, it seems to me that their well-trained sailors may, waiving false pride and vulgar jealousy, one day consent to estimates of distance founded, for all, on the most sacred traditions of the Norman, the Tuscan, and the Argonaut ; founded for the sailors of Marseilles and Venice—of Pisa and Amalfi—of Salamis and the Hellespont,—on the eternal lines which pass through the Flint of Fésole, and the Flowers of Ida.

CHAPTER X.

OF LIGHT AND SHADE.

1. I do not doubt that you can call into your mind with some distinctness the image of hawthorn blossom ;—whether, at this time of reading, it be May or November, I should like you, if possible, to look at the description of it in Proserpina (III., p. 142) ; but you can certainly remember the general look of it, in white masses among green leaves. And you would never think, if I put a pencil into your hand, and gave you choice of colors to paint it with, of painting any part of it *black*.

Your first natural instinct would be to take pure green, and lay that for the leaves ; and then, the brightest white which you could find on the palette, and put that on in bosses for the buds and blossoms.

2. And although immediate success in representation of hawthorn might possibly not attend these efforts, that first instinctive process would be perfectly right in principle. The general effect of hawthorn is assuredly of masses of white, laid among masses of green : and if, at the instigation of any learned drawing-master, you were to paint part of every cluster of blossoms coal-black, you would never be able to make the finished work satisfactory either to yourself, or to other simple people, as long as the black blot remained there.

3. You may perhaps think it unlikely that any draw-

ing-master would recommend you to paint hawthorn blossom half black. Nor, if instead of hawthorn, you had peach or apple blossom to paint, would you expect such recommendation for the better rendering of their rose-color? Nor, if you had a gentian to paint, though its blue is dark, would you expect to be told to paint half the petals black?

If, then, you have human flesh to paint, which, though of much mingled and varied hue, is not, unless sunburnt, darker than peach blossom;—and of which the ideal, according to all poets, is that it should be white, tinted with rose;—which also, in perfect health and purity, is somewhat translucent, certainly much more so than either hawthorn buds or apple blossom—Would you accept it as a wise first direction towards the rendering of this more living and varying color, to paint one side of a girl's face black? You certainly would not, unless you had been previously beguiled into thinking it grand or artistic to paint things under 'bold effects.'

And yet, you probably have been beguiled, before now, into admiring Raphael's Transfiguration, in which everybody's faces and limbs are half black; and into supposing Rembrandt a master of chiaroscuro, because he can paint a vigorous portrait with a black dab under the nose!

4. Both Raphael and Rembrandt *are* masters, indeed; but neither of them masters of light and shade, in treatment of which the first is always false, and the second always vulgar. The only absolute masters of light and shade are those who never make you *think* of light and shade, more than Nature herself does.

It will be twenty years, however, at least, before you can so much as *see* the finer conditions of shadow in mas-

ters of that calibre. In the meantime, so please you, we will go back to our hawthorn blossom, which you have begun quite rightly by painting white altogether; but which remains, nevertheless, incomplete on those conditions. However, if its outline be right, and it detaches itself from the green ground like a Florentine piece of mosaic, with absolutely true contour of clustered petal, and placing of scattered bud, you are already a far way on the road to all you want of it.

5. What more you *exactly* want is now the question. If the image of the flower is clear in your mind, you will see it to be made up of buds, which are white balls, like pearls; and flowers, like little flattish cups, or rather saucers, each composed of five hollow petals.

How do you know, by the look of them, that the balls are convex, and the cups concave? How do you know, farther, that the balls are not *quite round* balls, but a little flat at the top? How do you know that the cups are not deep, but, as I said, flattish, like saucers?

You know, because a certain quantity of very delicate pale gray is so diffused over the white as to define to the eye exactly the degree in which its surfaces are bent; and the gradations of this gray are determined by the form of surface, just as accurately as the outline is; and change with the same mathematical precision, at every point of their course. So that, supposing the bud were spherical, which it is not, the gradation of shade would show that it was spherical; and, flattened ever so little though it be, the shade becomes different in that degree, and is recognized by the eye as the shade of a hawthorn blossom, and not of a mere round globule or bead.

6. But, for globule, globe, or grain, small or great,—as

the first laws of line may best be learned in the lines of the Earth, so also the first laws of light may best be learned in the light of the Earth. Not the hawthorn blossom, nor the pearl, nor the grain of mustard or manna,—not the smallest round thing that lies as the hoar-frost on the ground—but around it, and upon it, are illuminated the laws that bade the Evening and the Morning be the first day.

7. So much of those laws you probably, in this learned century, know already, as that the heat and light of the sun are both in a fixed proportion to the steepness of his rays,—that they decline as the day, and as the summer declines; passing softly into the shadows of the Polar,—swiftly into those of the Tropic night.

But you probably have never enough fastened in your minds the fact that, whatever the position of the sun, and whatever the rate of motion of any point on the earth through the minutes, hours, or days of twilight, the meeting of the margins of night and day is always constant in the breadth of its zone of gradually expiring light; and that in relation to the whole mass of the globe, that passage from 'glow to gloom' is as trenchant and swift as between the crescent of the new moon and the dimness of the "Auld mune in her airms."

8. The *dimness*, I say, observe;—not the blackness. Against the depth of the night—itself (as we see it) not absolute blackness,—the obscured space of the lunar ball still is relieved in pallor, lighted to that dim degree by the reflection from the Earth. Much more, in all the forms which you will have to study in daylight, the dark side is relieved or effaced, by variously diffused and reflected rays. But the first thing you have to learn and

remember, respecting all objects whatever to be drawn in light and shade, is that, by natural light of day, half of them is in light, and half in shadow ; and the beginning of all light and shade drawing is in the true, stern, and perfect separation of these from each other.

9. Where you stand, and therefore whence you see the object to be drawn, is a quite separate matter of inquiry. As you choose, you may determine how much you will see of its dark and how much of its light side : but the first thing to be made sure of is the positive extent of these two great masses : and the mode in which they are involved or invaded at their edges.

And in determining this at first, you are to cast entirely out of consideration all vestige or interference of modifying reflective light. The arts, and the morality of men, are founded on the same primal order ; you are not to ask, in morals, what is less right and more, or less wrong and more, until in every matter you have learned to recognize what is massively and totally Right, from what is massively and totally Wrong. The beautiful enhancements of passion in virtue, and the subtle redemptions of repentance in sin, are only to be sought, or taken account of, afterwards. And as the strength and facility of human action are undermined alike by the ardor of pride and the cunning of exculpation, the work of the feeblest artists may be known by the vulgar glittering of its light, and the far-sought reflection in its shadow.

10. When the great separation between light and dark has been thus determined, the entire attention of the student is to be first put on the gradation of the *luminous* surface.

It is only on that surface that the form of the object is

exactly or consistently shown ; and the just distribution of the light, on that alone, will be enough to characterize the subject, even if the shadow be left wholly untouched. The most perfectly disciplined and scientific drawings of the Tuscan school consist of pure outlines on tinted paper, with the lights laid on in gradated white, and the darks left undistinguished from the ground. The group of drawings by Turner to which, in the schools of Oxford, I have given the title of the 'Nine Muses,' consists, in like manner, of firm pencil outline on pale gray paper ; the expression of form being entirely trusted to lights gradated with the most subtle care.

11. But in elementary work, the definition of the dark side of the object against the background is to be insisted upon, no less than the rising of the light side of the object out of shadow. For, by this law, accuracy in the outline on both sides will be required, and every tendency to mystification repressed ; whereas, if once we allow dark backgrounds to set off luminous masses, the errors of the outline in the shadow may be concealed by a little graceful manipulation ; and the drawing made to bear so much resemblance in manner to a master's work, that the student is only too likely to flatter himself, and be praised by others, for what is merely the dissimulation of weakness, or the disguise of error.

12. Farther : it is of extreme importance that no time should be lost by the beginner in imitating the *qualities* of shade attained by great masters, before he has learned where shadow of *any* quality is to be disposed, or in what proportion it is to be laid. Yet more, it is essential that his eye should not be satisfied, nor his work facilitated, by the more or less pleasant qualities of

shade in chalk or charcoal: he should be at once compelled to practise in the media with which he must ultimately produce the true effects of light and shade in the noblest painting,—media admitting no tricks of texture, lustre, or transparency. Even sepia is open to some temptation of this kind, and is to be therefore reserved for the days when the young workman may pretend to copy Turner or Holbein. For the beginner, pure and plain lampblack is the safest, as the most sincere, of materials.

It has the farther advantage of being extremely difficult to manage in a wash; so that, practising first in this medium, you will have no difficulty with more tractable colors.

13. In order not to waste paper, color, nor time, you must be deliberate and neat in all proceedings: and above all, you must have good paper and good pencils. Three of properly varied size are supplied in your box; to these you must add a commoner one of the size of the largest, which you are to keep separate, merely for mixing and supplying color.

Take a piece of thick and smooth paper; and outline on it accurately a space ten inches high by five wide, and, cutting it off so as to leave some half inch of margin all round, arrange it, the narrow side up, on a book or desk sloping at an angle of not less, nor much more, than 25°.

Put two small teacup-saucers; and your two pencils—one for supply, and one to draw with; a glass of water, your ivory palette-knife, and a teaspoon, comfortably beside you, and don't have any thing else on the table.

Being forced to content ourselves, for the present, with

tube colors, I must ask you to be very careful and neat in their use. The aperture, in tubes of the size you are supplied with, is about the eighth of an inch wide, and with the slightest pressure (to be applied, remember, always at the *bottom* of the tube, not the sides), you will push out a little boss or round tower of color, which ought not to be more than the eighth of an inch, or its own width, above the top of the tube. Do not rub this on the saucer, but take it neatly off with the edge of your knife, and so put it in the saucer; and screw the top of your tube nicely on again, and put it back in its place.

Now put two teaspoonfuls of water into one saucer, and stir the color well into it with your supply pencil. Then put the same quantity of pure water into the other saucer, and you are ready to begin.

14. Take first a pencilful of quite pure water, and lead it along the top of your five-inch space, leaving a little ridge of water all the way. Then, from your supply saucer, put a pencilful of the mixed color into the pure water; stir that up well with your pencil, and lead the ridge of pure water down with that delicatest tint, about half an inch, leaving another ridge all along. Then another pencilful from the supply saucer into the other, mixed always thoroughly, for the next half inch. Do not put the supply pencil into the diluted tint, but empty it by pressing on the side of the saucer, so that you may not dilute the supply tint, which you are to keep, through the course of each wash, quite evenly mixed. With twenty, or one or two less than twenty, replenishings, and therefore darkenings, of the tint you are painting with, you will reach the bottom of the ten-inch space; which ought

then already to present a quite visible gradation from white to a very pale gray.

15. Leaving this to dry thoroughly, pour the diluted tint you have been painting with away; wash out the saucer; put in another supply of clear water; and you are ready to lay the second coat. The process being entirely mechanical, you can read, or do any thing else you like, while the successive coats are drying; and each will take longer than the last. But don't go on with other drawings, unless indeed you like to tint two pieces of paper at once, and so waste less color—using the diluted tint of the first for the supply tint of the second, and so gaining a still more delicate gradation. And whether you do this or not, at every third coat pour the diluted tint back into the supply one, which will else be too soon exhausted. By the time you have laid on ten or twelve tints, you will begin to see such faults and unevenness as may at first be inevitable; but also you will begin to feel what is meant by gradation, and to what extent the delicacy of it may be carried. Proceed with the work, however, until the color is so far diluted as to be ineffective; and do not rest satisfied till you are familiar enough with this process to secure a gradated tint of even and pleasant tone. As you feel more command of the pencil, you may use less water with the color, and at last get your result in three or four instead of twenty washes.

16. Next, divide the entire space into two equal squares, by a delicate lead line across it, placing it upright in the same manner; and begin your gradation with the same care, but replenishing the tint in the pure water from the dark tint in as narrow spaces as you can, till you get down the uppermost square. As soon as you pass the dividing

line between the two squares, continue with the same tint, without darkening it, to the bottom, so that the lower square may be all of one tone. Repeating this operation three or four times, you will have the entire space divided into two equal portions, of which the upper one will be gradated from white into a delicate gray, and the lower covered with a consistent shade of that gray in its ultimate strength. This is to be your standard for the first shading of all white objects ; their dark sides being of an uniform tint of delicate gray, and their light sides modelled in tones which are always paler in comparison with it.

17. Having practised in this cautious manner long enough to obtain some ease in distribution of the tint, and some feeling of the delicacy of a true gradation, you may proceed to the more difficult, but wonderfully useful and comprehensive exercise, necessary for the copying of Plate X.

Draw first, with pencil-compasses, the two circles with inch radius, and in the lower one trace lightly the limit of its crescent of shade, on the 22nd meridian, considering the vertical meridian that of Fésole. Then mix your tint of black with two teaspoonfuls of water, very thoroughly, and with that tint wash in at once the whole background and shaded spaces. You need not care for precision on their inner edges, but the tint must be exactly brought up to the circumference of the circles on their light sides.

18. After the tint is thoroughly dry, begin with the circle divided in half, and taking a very little pure water to begin with, and adding, with a fine pencil, a little of the dark tint as you work down, (putting the light part upwards on your desk,) gradate, as you best can, to the shadow edge, over which you are to carry whatever tint

you have then in your pencil, flat and unchanged, to the other side of the circle, darkening equally the entire dark side.

In the lower circle, the point of highest light is at the equator, on the 4th meridian. The two balls therefore, as shaded in the plate, represent two views of the revolving earth, with the sun over the equator. The lower figure gives what is also the light and shade of the moon in her third quarter. I do not choose to represent the part of the earth under the night as black : the student may suppose it to be in full moonlight if he likes ; but the use of the figure is mainly to show the real, and narrow, extent of resources at his disposal, in a light and shade drawing executed without accidental reflected lights, and under no vulgar force of shadow. With no greater depths of tint than those here given, he must hold it his skill to render every character of contour in beautiful forms ; and teach himself to be more interested in them, as displayed by that primal sincerity of light, than when seen under any accidental effects, or violent contrasts.

19. The tint prepared with two teaspoonfuls of water, though quite as dark as the student will be able at first to manage, (or as any master can manage in complex masses,) will not, when dry, give shadow more than half the depth of that used for the background in the plate. It must therefore be twice laid ; the skill of the pencil management will be tested by the consistency of the two outlines. At the best, they are sure to need a little retouching ; and where accurately coincident, their line will be hard, and never so pleasant as that left at the edge of a first wash. I wish the student especially to notice this, for in actual drawing, it is a matter of absolute necessity

never to reduplicate a wash at the same edge. All beautiful execution depends on giving the outline truly with the first tint laid as dark as it is required. This is always possible with well-prepared colors in a master's hand; yet never without so much haste as must, unless the mastery be indeed consummate, leave something to be forgiven, of inaccuracy, or something to be grateful for, in the rewarding chance which always favors a rightness in method. The most distinctive charm of water-color, as opposed to oil, is in the visible merit of this hasty skill, and the entertaining concurrence of accidental felicity. In the more deliberate laying of oil-color, though Fortune always takes her due share, it is not recognizable by the spectator, and is held to the utmost in control by the resolution of the workman, when his mind is wise, and his piece complete.

20. But the student must not be discouraged by the difficulty he will find at first in reaching any thing like evenness or serenity of effect in such studies. Neither these, nor any other of the exercises in this book, are 'elementary,' in the sense of easy or initial; but as involving the first elements of all graphic Law. And this first study of light and shade in Plate X. does indeed involve one law of quite final importance; but which may nevertheless be simply expressed, as most essential matters may be, by people who wish it.

21. The gradation which you have produced on your first ten-inch space is, if successful, consistent in its increase of depth, from top to bottom. But you may see that in Plate X. the light is diffused widely and brightly round the foci, and fades with accelerated diminution towards the limit of darkness. By examining the law under

which this decrease of light takes place on a spherical (or cylindrical*) surface, we may deduce a general law, regulating the light in impact on any curved surface whatever.

In all analysis of curved lines it is necessary first to regard them as made up of a series of right lines, afterwards considering these right lines as infinitely short.

22. Let therefore the line A B, Figure 31, represent any plane surface, or an infinitely small portion of any curved

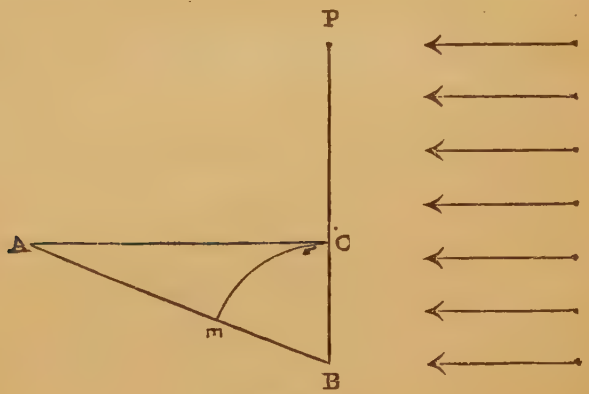

FIG. 31.

surface, on which the light, coming in the direction of the arrows, strikes at a given angle B A C.

Draw from B, B P perpendicular to A C, and make B P equal to A B.

Then the quantity of light, or number of rays of light, supposing each arrow to represent a ray, which the so inclined surface A B can receive, is to the quantity it could

* In the upper figure, the actual gradation is the same as that which would be true for a cylinder.

receive if it were perpendicular to the light, (at P B,) as the line B C is to the line P B, which is equal to the line A B.

Therefore if we divide the line A B, from A to B, into any number of degrees, representing the gradual diminution of light, uniformly, from any given maximum at A to any given minimum at B, and draw the circle C T with the radius B C, cutting A B in T, the point T, on the scale

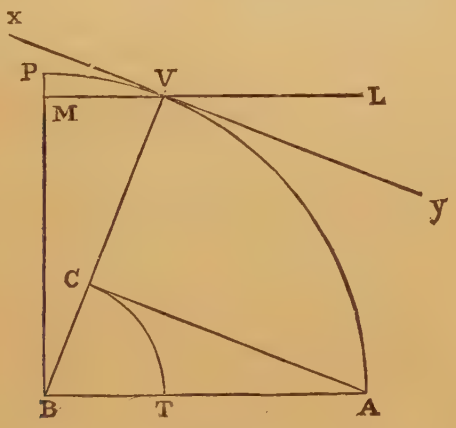

FIG. 32.

of shade so gradated, will mark the proper tint of shade for the entire surface A B.

This general law, therefore, determines the tint of shade, in any given scale of shade, for the point of any curved surface to which the line A B is a tangent.

23. Applying this general law to the light and shade of a sphere, let the light, coming in the direction L V, Figure 32, strike the surface of the quadrant P A at the point V, to which the line X Y is a tangent. B being the centre

of the sphere, join B V, and from A draw A C parallel to X Y, and therefore perpendicular to B V. Produce L V to M, and draw the arc of circle C T, cutting A B in T.

Then, by the law last enunciated, if we divide the line A B uniformly into any number of degrees of shade from the maximum of light at A to its minimum at B, the point T will indicate, on that scale, the proper shade for the point of sphere-surface, V. And because B V equals B A, and the angle B V M equals the angle A B C, ∴ M V equals B T; and the degree of shade may at once be indicated for any point on the surface A P by letting fall a vertical from it on the uniformly gradated scale A B.

24. Dividing that scale into ninety degrees from A to B, we find that, on the globe, when the sun is over the equator, the Christian circle, though in 60 degrees north latitude, receives yet 45 degrees of light, or half the quantity of the equatorial light, and that, approximately,* the losses of the strength of light in the climates of the five circles are,—

St. James's,	3 degrees loss,	leaving 87 of light.
Arabian,	12 degrees loss,	leaving 78 of light.
Venetian,	26 degrees loss,	leaving 64 of light.
Christian,	45 degrees loss,	leaving 45 of light.
Fern,	67 degrees loss,	leaving 23 of light.

But it is always to be remembered that in the real passing of day into night, the transition from the final degree of shadow on the gradated curvature of the illumi-

* Calculated to two places of decimals by Mr. Macdonald, the Master of my Oxford schools, the fractional values are 3.07, 12.06, 26.36, and 66.71, giving the regulated diminishing intervals 8.99, 4.30, 18.64, 21.71, and 23.29, or, roughly, 9, 14, 18, 21, 23.

nated hemisphere, to night itself, is a much greater one than it is our power to express by any scale : so that our 90 measured degrees do not carry us even into twilight, but only to the point and moment of sunset. They express, however, with approximate accuracy, the relation of the terrestrial climate so far as it depends on solar influences only, and the consequently relative power of light on vegetation and animal life, taking the single numerical expression as a mean for the balanced effect of summer and winter.*

25. Without encumbering himself, in practice, by any attempts to apply this, or any similar geometric formulæ, during the progress of his work, (in which the eye, memory, and imagination are to be his first, and final, instruments,) the student is yet to test his results severely by the absolute decrees of natural law ; and however these may be prudently relaxed in compliance with the narrowness of his means, or concession to the feebleness of his powers, he is always to remember that there is indeed a right, and a wrong, attendant on the purpose and act of every touch, firm as the pillars of the earth, measured as the flight of its hours, and lovely as the moral law, from which one jot or tittle shall not pass, till all be fulfilled.

26. Together with these delicate exercises in neutral tint, the student cannot too early begin practice in laying frank and full touches of every zodiacal color, within stated limits. He may advisably first provide himself with examples of the effects of opposition in color, by

* The difference in effective heat between rays falling at large or small angles, cannot be introduced in this first step of analysis : still less is it necessary to embarrass the young student by any attempt to generalize the courses of the isothermal lines.

drawing the square of the Fern line, measured on his twelve-inch globe, within the square of the Venetian line; then filling the interior square with any one of the zodiacal colors, and the enclosing space between it and the larger square, with the opponent color: trying also the effect of opposition between dark tints of one color and light tints of the other: each wash to be laid on at once, and resolutely left without retouching. The student will thus gradually gain considerable power of manipulating the pencil, with full color; recognize more clearly day by day how much he has to gain; and arrive at many interesting conclusions as to the value and reciprocal power of opposed hues.

27. All these exercises must, however, be kept in subordination to earnest and uninterrupted practice with the pen-point or the lead; of which I give two more examples in the present number of Fésole, which, with those already set before the student, Plates V., VI., and VIII., will form a quite sufficient code for his guidance until I can begin the second volume.*

28. Plate XI. represents, as far as mezzotint easily can, a drawing of the plan and profile of a leaf of wild geranium, made lightly with the lead, and secured by a single washed tint above it.

Every care is to be given in study of this kind to get the outline as right and as refined as possible. Both shade and color are to be held entirely subordinate; yet shade is to be easily and swiftly added, in its proper place, and any peculiar local color may be indicated, by way of memorandum, in the guarding tint, without attempting the effect of a colored drawing. Neither is any finish or

* During the spring I must confine my work wholly to Proserpina.

depth to be sought in the shade. It should rightly indicate the surges or troughs of the leaf, and the course and projection of large ribs, (when the plan drawing is made of the under surface,) but it must not be laboriously completed or pursued. No study of this kind should ever take more than an hour for plan and profile both : but the outline should be accurate to the utmost of the student's power, and as delicate as the lead will draw.

29. Although, in beginning, precise measurements are to be taken of the leaf's length and breadth, yet the mistakes inevitable during execution cannot be easily corrected without some variation in the size ; it is far better to lose the exact measurement than the feeling of the form. Thus my profile is nearly a quarter of an inch too long for the plan, because I could not get the spring of it to my mind in its first proportion. The *plan* may generally be kept to its true scale ; and at all events the measures should be marked for reference within their proper geometrical limits, as in the upper outline, of which I have more to say in another place.

30. Plate XII. gives example of an equally rapid mode of study when the object is essentially light and shade. Here the ground is a deeply toned gray paper ; the outline is made with stern decision, but without care for subtlety in minor points ; some gradations of shade are rapidly added with the lead,—(BB) ; and finally, the high lights, laid on with extreme care with body-white. Theoretically, the outline, in such a study as this, should always be done first : but practically, I find it needful, with such imperfect skill as I have, to scrabble in the pencil shadows for some guide to the places of the lights ; and then fasten every thing down firmly with the pen out

line. Then I complete the shadow as far as needful; clear the lights with bread first; and then, which is the gist of the whole, lay the high lights with carefullest discipline of their relations.

Mr. Allen's very skilful mezzotint ground is more tender and united than the pencil shadow was, in this case; or usually need be: but the more soft it is the better; only let no time be lost upon it.

31. Plate VIII., given in the last number of Fésole, for illustration of other matters, represents also the complete methods of wholesome study with the pen and sepia, for advanced rendering both of form and chiaroscuro.

Perfect form never can be given but with color (see above, Chapter VIII. § 22). But the foundational elements of it may be given in a very impressive and useful way by the pen, with any washed tint. In the upper study the pen only is used; and when the forms are complete, no more should be attempted; for none but a great master can rapidly secure fine form with a tint. But with the pen, thus used, much may be reached by the student in very early stages of his progress.

32. Observe that in work of this kind, you are not to be careful about the direction or separation of the lines; but, on the other hand, you are not to slur, scrabble, or endeavor to reach the mysterious qualities of an etching. Use an ordinarily fine pen-point, *well kept down;* and let the gradations be got by the nearness or separation, singleness or crossing of the lines, but not by any faintness in them.

But if the forms be simple, and there be a variety of local colors which is important in the subject,—as, in the lower study, the paleness of the stamens of the pink in

relation to its petals,—use the pen only for fine outline, as in Plate XII.; and when that is perfectly dry, complete the light and shade with as few washes as possible.

33. It is also to be noted that a dark background is admissible only, in chiaroscuro study, when you intend to refuse all expression of color, and to consider the object as if it were a piece of sculpture in white marble. To illustrate this point more strongly, I have chosen for the chiaroscuro plate, XII., a cluster of scarlet geranium; in which the abstraction of the form from the color brings out conditions of grace and balance in the blossom which the force of the natural color disguised. On the other hand, when the rich crimson of the Clarissa flower (Plate VIII.) is to be shown in opposition to the paler green of its stamens, I leave the background pure white. The upper figure in the same plate being studied for form only, admits any darkness of background which may relieve the contour on the light side.

34. The method of study which refuses local color, partly by the apparent dignity and science of it, and partly by the feverish brilliancy of effect induced, in engraving, by leaving all the lights white, became the preferred method of the schools of the Renaissance, headed by Leonardo: and it was both familiarized and perpetuated by the engravings of Durer and Marc Antonio. It has been extremely mischievous in this supremacy; but the technical mischief of it is so involved with moral faults proceeding from far other causes, that I must not here attempt its analysis. Every student ought, however, to understand, and sometimes to use, the method; but all main work is to be with the severest respect to local color, and with pure white background.

35. Note yet once more. Although for facility of work, when form alone is needed, the direction of the pen-stroke is to be disregarded, yet, if texture, or any organic character in the surface of the object, be manifest, the direction or manner of breaking, in the pen touch, may pleasantly comply with such character, and suggest it. The plate of Contorta Purpurea (VII. in Proserpina) is thus engraved with the double intention of expressing the color of the flower and the texture of the leaf, and may serve for enough example in this particular ; but it is always to be remembered that such expedients are only partial and suggestive, and that they must never be allowed to waste time, or distract attention. Perfect rendering of surface can only be given by perfect painting, and in all elementary work the student should hold himself well disengaged from serfdom to a particular method. As long as he can get more truths in a given time, by letting his pen-point move one way rather than another, he should let it easily comply with the natural facts,—but let him first be quite sure he sees the facts to be complied with. It is proper to follow the striæ of an ophrys leaf with longitudinal touches, but not, as vulgar engravers, to shade a pearl with concentric circles.

36. Note, finally, that the degree of subtlety in observation and refinement of line which the student gives to these incipient drawings must be regulated in great degree by his own sense and feeling, with due relation to the natural power of his sight : and that his discretion and self-command are to be shown not more in the perseverance of bestowing labor to profit, than in the vigilance for the instant when it should cease, and obedience to the signals for its cessation. The increasing power of

finish is always a sign of progress ; but the most zealous student must often be content to do little ; and the greatest observe the instant when he can do no more.

37. The careless and insolent manners of modern art study, (for the most part,) forbid me the dread of over-insistance on minutiæ of practice ; but I have not, for such reason, added to the difficulty or delicacy of the exercises given. On the contrary, they are kept, by consistent attention, within the easy reach of healthy youthful hand and sight ; and they are definitely representative of what should properly be done in *drawings*, as distinguished from the qualities attainable by the consummate line-engraver. As an example of what, in that more subtle kind, the human eye and finger can accomplish by severe industry, every town library ought to possess, and make conveniently accessible to its students, the great botanical series of the Floræ Danicæ. The drawings for the numbers produced before the year 1820 were in better taste, and the engravings more exemplary in manner, than in the supplementary numbers lately in course of publication : but the resolute and simple effort for excellence is unfailing throughout ; and for precision and patience of execution, the nine plates, 2744 to 2753, may be safely taken as monumental of the honor, grace, and, in the most solemn sense, majesty, of simple human work,* maintained amidst and against all the bribes, follies, and lasciviousness of the nineteenth century.

38. Together with these, and other such worthily exe-

* With truly noble pride, neither the draughtsman nor the engraver have set their names to the plates. "We are Men," they say, "with the hearts and hands of Men. That is all you need know. Our names are nothing to you."

cuted illustrations of natural history, every public institution should possess several copies of the 'Trésor Artistique de la France,' now publishing in Paris. It contains representations, which no mechanical art can be conceived ever likely to excel, of some of the best ornamental designs existing; with others, (I regret to observe, as yet, much the plurality,) of Renaissance jewellery, by which the foulness and dulness of the most reputed masters of that epoch are illustrated with a force which has not hitherto been possible. The plates, which represent design of the greater ages, more especially those of the Boite d'Evangéliaire of St. Denis, with the brooch and cassette of St. Louis, had better be purchased by those of my students who can afford the cost; and with these, also, the uncolored plates of the Coffret à Bijoux of Anne of Austria, which is exemplary of the best Renaissance wreathen work. The other pieces of sixteenth and seventeenth century toys, given in this publication, are all of them leading examples of the essential character of Renaissance art,—the pride of Thieves, adorned by the industry of Fools, under the mastership of Satyrs. As accurately representative of these mixtures of bêtise with abomination, the platter and ewer executed in Germany, as an offering to the Emperor Charles V. on his victory at Tunis, are of very notable value: but a more terrific lesson may be read in the ghastly and senseless Gorgons of the armor of Henry II., if the student of history remember, in relation to them, the entertainment with which he graced his Queen's coronation; and the circumstances of his own death.

39. The relations between the rich and poor, on which the pomp of this Renaissance art was founded, may be

sufficiently illustrated by two short passages, almost consecutive, in 'Evelyn's Diary':

"11 May (1651).—To the Palace Cardinal, where y^e^ M^r^. of Ceremonies plac'd me to see y^e^ royal masque or opera. The first sceane represented a chariot of singers compos'd of the rarest voices that could be procur'd, representing Cornaro and Temperance; this was overthrowne by Bacchus and his Revellers; the rest consisted of several enteries and pageants of excesse, by all the Elements. A masque representing fire was admirable; then came a Venus out of y^e^ clouds. The conclusion was an heaven, whither all ascended. But the glory of the masque was the greate persons performing in it: the French King, his brother the Duke of Anjou, with all the grandees of the Court, the King performing to the admiration of all. The music was 29 violins, vested *à l'antiq*, but the habits of the masquers were stupendiously rich and glorious.

* * * * * *

"29 January.—I sat out in a coach for Calais, in an exceeding hard frost, which had continued some time. We got that night to Beaumont; 30, to Beauvais; 31, we found the ways very deepe w^th^ snow, and it was exceeding cold; din'd at Pois; lay at Pernée, a miserable cottage of miserable people in a wood, wholly unfurnished, but in a little time we had sorry beds and some provision, w^ch^ they told me, they hid in y^e^ wood for feare of the frontier enemy, the garisons neere them continually plundering what they had. They were often infested with wolves. I cannot remember that I ever saw more miserable creatures."

40. It is not, I believe, without the concurrence of the

noblest Fors, that I have been compelled, in my reference to this important French series of illustrative art, to lead the student's attention forward into some of the higher subjects of reflection, which for the most part I reserve for the closing volume of the Laws of Fésole. Counting less than most men, what future days may bring or deny to me, I am thankful to be permitted, in the beginning of a New Year of which I once little thought to see the light, to repeat, with all the force of which my mind is yet capable, the lesson I have endeavored to teach through my past life, that this fair Tree Igdrasil of Human Art can only flourish when its dew is Affection ; its air, Devotion ; the rock of its roots, Patience ; and its sunshine, God.

END OF VOL. I.

ST. OLAF COLLEGE
PR5261 .L3 1879 OM
Ruskin, John - The laws of fesole, a familiar letre
3 0 00274
T2-BAC-491